

PERSONAL COMPUTER **COMBAT** **SIMULATIONS!**

FLIGHT SIMS BRIEFING

- DAWN PATROL
- WORLD WAR TWO
- T.F.X.

**FLIGHT
CONTROLLERS
AND
JOYSTICKS
FOR
CHRISTMAS**

TANKS!

- ARMORED FIST
- PANZER GENERAL

U.S. \$3.95 CANADA \$4.95

12

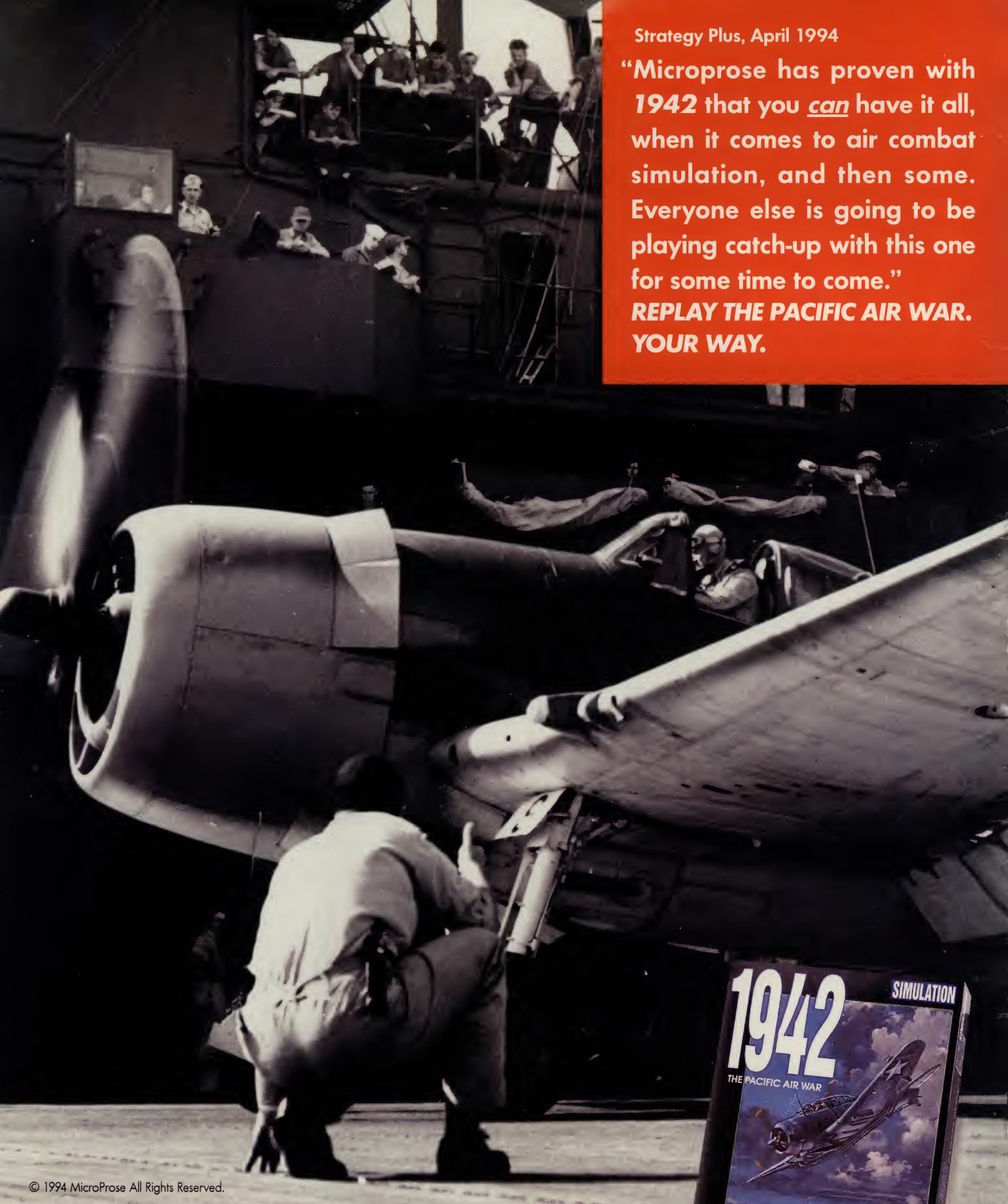


0 71486 01681 6



Strategy Plus, April 1994

"Microprose has proven with **1942** that you can have it all, when it comes to air combat simulation, and then some. Everyone else is going to be playing catch-up with this one for some time to come."
REPLAY THE PACIFIC AIR WAR. YOUR WAY.



© 1994 MicroProse All Rights Reserved.



MICRO PROSE®
Anything is possible.

1-800-879-PLAY. For IBM-PC/Compatibles & CD-ROM.

PERSONAL COMPUTER COMBAT SIMULATIONS!

C O N T E N T S

5 SIM SCENE

Late-breaking news and a sneak preview of Top Gun, Falcon 4.0 and Star Trek: The Next Generation

8 TIE FIGHTER *by Alfred Giovetti*

PC Combat Sims looks at the best Star Wars game ever! Plus, The Tie Fighter Official Strategy Guide and Star Wars Screen Entertainment

13 ALIEN LEGACY *by Bernard Dy*

Sierra Software's space exploration and colonization adventure!

14 SABRE TEAM *by Bernard Dy*

Microleague's squad-level combat simulation

16 T.F.X. (Tactical Fighter Experiment) *by Eric "Reckless" Pearson*

Air combat action featuring the Euro Fighter, F-117 Stealth Fighter and the F-22 Lightning II, in this stunning new flight simulation

24 V.A.C.S.! *by Jim Bender*

Virtual Air Combat System's new F-16 cockpit simulator starts its takeoff roll!

26 FLIGHT SIM TOOLKIT: WORLD WAR II *by Alfred Giovetti*

Domark introduces its expansion of FST that includes D-Day and the Battle of Midway!

30 ARMOR COLUMN *by Jim Bender*

Previews of Armored Fist and Panzer General, plus an in-depth report on simulated tank warfare at the Army's National Training Center at Ft. Irwin, California

40 DAWN PATROL *by Jim Bender*

Join the Flying Circus of World War I with Empire's spectacular new flight simulation

45 READ ALL ABOUT IT *by Jim Tittle*

Reference books on military history and tactics can improve your flight sim performance

50 THUNDERSEAT *by Jim Bender*

The same tactile feedback systems used in USAF F-16 simulators is now available to the public

52 AVIATION CD-ROMs ARRIVE IN TIME FOR CHRISTMAS *by Bernard Dy*

53 FLIGHT PERFORMANCE TIPS FOR ACES OVER EUROPE *by Shay Addams*

54 PHANTASMAGORIA *by Jim Bender and Maria Boylan*

Sierra debuts its new interactive video/multimedia production facility

60 BATTLE OF BRITAIN REVISITED *by Jim Tittle*

Thinking of buying a budget flight sim program? Take a look at LucasArts' B.O.B.!

64 FLY WITH THE BLUE ANGELS *by Fred Blechman*

Iwerks' touring Reactor simulator puts you in the cockpit with the Blue Angels!

72 AVIATION ART PRINTS FOR FLIGHT SIM FANS *by Larry Bledsoe*

Sixteen "best buys" from leading aviation artists to add to your Christmas list

76 FLIGHT CONTROLLERS AND JOYSTICKS *by Alfred Giovetti*

Christmas won't be complete without the latest flight control stick!

78 KELVIN 64 SOUND CARD *by Pat Hunt*

PC Combat Sims auditions the latest sound card from Orchid Technologies

PC SIMULATIONS

VOLUME 2, NUMBER 5

NOVEMBER / DECEMBER 1994

Editorial & Production Staff

Edwin A. Schnepf / *Publisher*
Jim Bender / *Associate Publisher & Editor*
Martin E. Arant, Bernard Dy, Alfred Giovetti,
Eric Pearson, Pat Hunt, Jason Bender,
Scott Harper / *Contributing Editors*
Maria Boylan / *Editorial Assistant*
R. Reese / *Associate Editor*
Andrew Garcia / *Art Director*
Jose Martinez, Vladimir Babnic /
Assistant Art Directors
J. Paul Perreault / *Copy Editor*
Candy Raskin / *Typographer*
Richard Graves / *Graphics Director*
Fred Alires / *Production Coordinator*
Tom Combs / *Circulation Director*
Susan Duprey / *Circulation Manager*
Carol Van Orsdol / *Business Manager*

Advertising Staff

Jim Bender / *Advertising Director,*
Aviation & Computer Group
Geri Jensen / *Advertising Coordinator*

Editorial & Advertising Offices

PC Simulations
7950 Deering Ave.
Canoga Park, CA 91304
Tel. (818) 887-0550 (7:30-6:00 Mon.-Thurs.)
FAX (818) 884-1343
America OnLine: Jimbender1

PC COMBAT SIMULATIONS (ISSN 1077-7350) is published bimonthly by Challenge Publications, Inc., 7950 Deering Ave., Canoga Park, CA 91304. Copyright © 1994 by Challenge Publications, Inc. All rights reserved. Nothing in whole or in part may be reproduced without written permission of the publisher. Send editorial and advertising material to 7950 Deering Ave., Canoga Park, CA 91304. Publisher assumes no responsibility for unsolicited material. All photos, artwork, and manuscripts must be accompanied by a stamped self-addressed return envelope. POSTMASTER — SEND ADDRESS CHANGES TO: PC COMBAT SIMULATIONS, P.O. BOX 16149, NORTH HOLLYWOOD, CA 91615. Please give eight to twelve weeks notice of address change. Send both old and new address plus mailing label from recent issue, if available. Subscription rate: U.S. and possessions one year \$13.95, all other countries \$19.95 (U.S. funds).

PRINTED IN U.S.A.

EDITORIAL

This issue of **PC COMBAT SIMULATIONS** marks the start of our third year! Most of 1993 was consumed with the launch of the First issue, which hit the streets last December. 1994 saw a move to a bimonthly schedule and we are considering the possibilities of moving to monthly later in 1995! Subscriptions to **PC COMBAT SIMULATIONS** are now available,--see the advertisement in this issue to order!

There is a wealth of subject matter for **PC COMBAT SIMS** to cover: flight sims spanning the history of aerial warfare; mechanized warfare from World War One into the future; battles above, on and under the high seas; combat that spans galaxies; and any other conflict the programmers can dream up! Plus, we'll continue to expand our coverage of hardware and accessories and we'll bring you the latest news on location based entertainment, like this issue's story on the **Reactor Blue Angels simulator**.

Our favorite stories stem from our extensive contacts throughout the military. We will continue to report on military training simulations, such as the fascinating frontline story **Regimental Attack!**, about tank warfare at the Army's National Training Center at Ft. Irwin, California.

You'll find feature flight sim reviews in this issue that cross the ages. **Dawn Patrol** from Empire Software puts you in the Flying Circus of World War One, **Flight Sim Toolkit / World War Two** takes you to the skies over Normandy and Midway, **TFX** (Tactical Fighter Experiment) enables you to fly the very latest aircraft: the Stealth Fighter, Euro Fighter and the supersonic stealth, the F-22 Lightning II. **Tie Fighter**, the best Star Wars game to date, literally makes you a part of the movie as you carry out missions in service of the Empire. As ever, all of our feature articles are lavishly illustrated with choice screen shots, the finest aviation art and the very best photography.

PC COMBAT SIMULATIONS strives to bring you behind the scene reports on what's happening in the world of computer gaming. This issue we visit Sierra's new interactive video facility, where **Phantasmagoria** is in production. Late-breaking reports include a preview of the new Spectrum Holobyte programs: **Star Trek: The Next Generation**, **Top Gun** and **Falcon 4.0**, and an update on NovaLogic's **Armored Fist** tank warfare simulation.

We hope you'll stay with us in '95 as we continue to explore the lifestyle of computer gaming. Have a happy holiday season, and don't forget to write! □



B Y J I M B E N D E R

FLIGHTDECK MODULE ANNOUNCED

Etloh Technologies recently announced the release of their new simulation control module, **The FLIGHTDECK**.

While the idea for a joystick mounting platform is not new, whether it be a simple clamp or a full-blown cockpit, **The Flightdeck** combines the ability to create your own cockpit environment with light weight and transportability. And for about the price of a joystick!

Company president Danny Holte says, "The idea came about while attending local fly-ins. Everyone would bring in their top-of-the-line computer system, hi-tech Thrustmaster and CH Products equipment, and attach them to the table with clamps, duct tape; whatever would hold them down. This method was time consuming, damaging to desks, and it just wasn't any fun! Since I was doing the same thing, I thought there must be a better way."

Flightdeck
Module
by Etloh
Technologies



So **The Flightdeck** was born. Throttle and joystick controls are mounted securely to the non-slip base and the keyboard can be adjusted to suit the individual's needs. Cables are routed to either side and away from your rudder pedals with Velcro straps and there's even a conveniently located notepad for recording important mission information (i.e. Shoot down "Kidder" at next fly-in...) Its light weight, durability, and convenience make it perfect for the armchair warrior who likes to fly solo at home and yet have the ability to quickly pack up and get together for some head-to-head furballs via network.

The Flightdeck can be flown from any flat surface, but an optional stand is available. Some testers preferred to place **The Flightdeck** right on their lap, and thought this afforded the most realism.

The Flightdeck is compatible with Thrustmaster WCS, WCSII, FCS, and Pro FCS, as well as CH Products Flightstick, Flightstick Pro and others.

Etloh Technologies can be reached at P.O. Box 1493, Westminster, CA 92684-1493 or by phone at (714) 891-6425.

— Scott Harper

DOHH! THE SIMPSONS SCREEN SAVER

It came in a box with a label on it which said, "This package contains HOT material from the Springfield Power Plant. PLEASE read the enclosed instructions before opening — your sense of humor may depend on it!" The

caution appeared between twin radiation warning propellers. This was the first time I was tempted to save the shipping container along with the program. Inside the box was a yellow bag marked "Caution — Radioactive Material."

The little "Radioactive" tag tied to the bag had instructions on it: "1. PULL on rubber gloves, eat donut." Unfortunately, the gloves were inside the yellow bag, and there were no donuts. This was not surprising, considering the source is a company that handles radioactive material under the scrutiny and auspices of the U.S. Government.

There are many more new PC simulations currently on store shelves or about to be released than we can comfortably fit in this issue! We try to provide feature length previews or reviews of as many programs as we can, but many other new programs deserve to be covered! Here are some of the most interesting new programs and accessories that are heading your way...

THE SIM SCENE

So I followed the other instructions on the red tag, once I obtained a box of donuts. "II. GENTLY open containment bag; eat donut. III. CAREFULLY remove The Simpsons Screen Saver; eat donut. IV. FOLLOW all installation instructions; eat donut. V. SIT BACK, RELAX, and enjoy the zany new **SIMPSONS SCREEN SAVER** from Berkeley Systems, Inc.; eat donut."

We all know that it had to happen. That entertainingly perverse family created by the irreverent and offbeat Matt Groening had to be introduced into our systems to pollute and unfortunately amuse. The screen saver about America's first family of radioactive waste is ecologically sound, with an EcoLogic connection that powers down Energy Star monitors after a predetermined period of disuse. So while the **Simpsons** pollute our mind, your computer monitor will do its part to slow the persistent and inevitable slide of civilization into total ecological chaos.

The screen saver features over 40 **Simpsons** characters, including Homer, Marge, Bart, Lisa, Maggie, Grampa, Krusty the Clown, and others. Throw a tomato at Krusty the Clown. Listen to Grampa's words of wisdom. Cross-dress with Homer and Flanders. Answer **Simpsons** trivia questions. Learn from Bart why our youth enjoy defacing any flat surface with graffiti. Learning how to draw the **Simpsons** will show you how easy it is, and that Matt Groening's true genius is not in the art department.

Aww, go ahead, spend your beer money on a totally worthless statement of escapist social commentary. I guarantee it will not increase your knowledge, awareness, or understanding of the world's problems. But then again, we are sliding irretrievably into oblivion, no matter how fast we spend our money on Eco-PACs.

Available for both Mac and IBM. IBM product requires 386 computer, Microsoft Windows 3.1 or better, VGA monitor or better, four Mb RAM, and five Mb free hard disk space. Suggested retail price is not available. Expected street price is about \$30.

For more information, contact Berkeley Systems, 2095 Rose St., Berkeley, CA 94709, or call (510) 540-5535.

— Al Giovetti

PACIFIC STRIKE: GROUNDED!

On July 15th, Origin posted an official notice addressing further development of their **PACIFIC STRIKE**

product. The letter stated, "After much debate and research, we found that it would take a minimum of six months to make any significant patches for the game. These patches would then need to be tested to see if, in fact, they would be acceptable to our customers. Six months or longer to wait for a patch, is a significant amount of time. Therefore, we will not be making a patch."

In other words, Origin has officially abandoned **Pacific Strike** and determined that it would be unfeasible to further fix or enhance it. Origin representatives stated, "Looking at what it would take to fix some of the serious glitches would probably take an overhaul of the game engine, and even then there are no guarantees that you'd be satisfied. That is, if you're one of the unsatisfied people to begin with. We actually have a large number of people who are very happy with the product."

They added, "So far, the only snags we've hit with it are from a speed perspective and a couple of sound glitches." Many users disagree, and have found the product unfit to run on anything less than a Pentium or the faster 486 processors, and others who can operate the software still consider it flawed due to bugs or installation difficulties.

In the May/June 1994 issue of **PCCS**, we reported great plans for **Pacific Strike**, including a CD-ROM version, additional mission disks, and perhaps a sequel. At the time, we also talked to some of the game's designers, and were told of the extensive research done to make **Pacific Strike** both entertaining and realistic.

Unfortunately, theory and reality often clash, as they have here. Great graphics were not enough to save choppy animation. On-line, scathing messages proliferated recounting consumer disappointment. Origin's representatives have publicly apologized for the difficulties in using the software and offer promises that current efforts are concentrated on keeping their upcoming WWI product, *Wings of Glory*, from contracting **Pacific Strike**'s afflictions.

Origin designers explained, "The PS [**Pacific Strike**] team took the SC [Strike Commander] engine and tried to push it even further, meaning more planes in the air at the same time, etc., so it pushed that much more data through the processor. We have learned a lesson. *Wings of Glory* is being completely rewritten in 32-bit protected mode and switching over to the HMI sound system

and that should alleviate some of the slow down we have with **PS**. Likewise, we're going to be positioning **WOG** as a great WWI adventure game that the player can make as realistic as she or he wants..."

The response to **Pacific Strike** appears largely negative. Outspoken users on-line have clamored for more action from Origin and have been vehement about boycotting future Origin releases. Still, some users have expressed support for Origin, either for satisfaction with the product or with the way Origin is handling the issue.

The Austin, Texas-based company is hopeful customers will remain loyal and give them another opportunity. "We appreciate the patience of our customers and promise to learn from experience," said the notice. "If you're unsatisfied with the game, we're sorry. All we can try to do is keep you as a customer or win you back. And about the only thing we can do is follow up the game you're unhappy with, with a game you'll enjoy."

— Bernard Dy

SPECTRUM HOLOBYTE PREVIEWS NEW SIMULATIONS

Industry leader Spectrum Holobyte previewed three new products that are currently under development: **STAR TREK: THE NEXT GENERATION "A FINAL UNITY"**, set for late fall '94;

TOP GUN, set for release by mid-1995; and **FALCON 4.0**, set for release later in 1995. These three benchmark simulations will certainly set new standards for both the science fiction and flight simulation categories.

Let's take a look at what innovations each product will feature...

STAR TREK: THE NEXT GENERATION "A Final Unity" PC CD-ROM

A Final Unity is an interactive space adventure that closely mirrors the television series and includes the actor's voices, authentic music and sound effects. Players will be able to assume a participatory role in the action, by choosing to "be" one of the seven main characters in the TV series. Players may decide whether or not to send an Away Team in response to a distress call. They will use their knowledge of the characters' special skills to choose which of seven characters might be best to send on such missions. This CD-ROM will appeal to Star Trek fans and space adventure fans alike. It's rich with the

(continued on page 58)



FIGHTER WING™

**It's combat
no matter
how you
look at it!**



Fighter Wing is a new breed of flight simulation game, offering the ultimate arcade flight combat experience with the world's top fighter aircraft, but without the steep learning curves. Armed with the high performance Gemsoft™ 3-D engine with real time terrain generation using real maps, a wide variety of challenging combat missions, and actual combat video footage, **Fighter Wing** packs an awesome arsenal that can outgun any flight combat simulator.

DOS CD-ROM Version



- **Fighter wing** provides a "sit and shoot" experience in a matter of minutes
- Featuring actual video footage from the award winning TV series **FirePower™**
- Choose from **Training Missions; Multiple player Missions for up to 16 players playing over a Local Area Network; and Complex Missions for 1-3 players competing against the computer**
- Pilots can fly all of today's state-of-the-art aircraft from the world's most powerful nations, in the world's most dangerous hot spots.

Developed by
GEMSOFT CORP.

To purchase this product, visit your local retail store or call Merit Studios at 800 238-4277

©1994 Merit Studios™. Fighter Wing™ ©1994 by Gemsoft Corporation. All Rights Reserved. Fighter Wing™ is a registered trademark of Gemsoft Corporation. FIREPOWER™ video sequences licensed from Video Ordinance, Inc. ©1988-1993 Video Ordinance, Inc. All Rights Reserved. FIREPOWER™ is a trademark of Video Ordinance, Inc., NY. All other trade names are properties of their respective owners. Photos courtesy of Video Ordinance, Inc.



TIE FIGHTER: THE SEQUEL TO X-WING



BY ALFRED C. GIOVETTI

When the first Star Wars movie hit the theaters, I was in the long lines with the rest, waiting to see the phenomenally good space opera. When the sequels came out, I rushed to the theaters again to shell out big bucks and wait for hours in the long lines. The amazement and sheer joy over what George Lucas had accomplished was only marred by the nagging thought that it wasn't Star Trek, and why wouldn't Paramount do a movie?

FLY THE BEST!

THE BEST GAME CONTROLLERS FOR YOUR SYSTEM

CH Products offers gamers quality joysticks, flight yokes, gamecards, and trackballs for all games and simulations. We've taken our line of **IBM** peripherals and expanded into **Macintosh** and **3DO™**. From advanced computer pilots and auto racers to those just taking off, CH Products has the right controller for you, all Made-in-the U.S.A.



CH Products lets you fly higher, move faster, reach farther!



CH Products / 970 Park Center Drive / Vista, CA 92083
Phone: 619.598.2518 Fax: 619.598.2524

You see, I was part of the '60s generation who sat in front of the television set, waiting for my number to be called for that great adventure in death and destruction that we called the Vietnam conflict, in a vague attempt to avoid the schoolwork that would keep us from a wet death in an Asian rainforest. So Star Trek held us in rapt fascination, nurturing a desperate hope that the future would be a better world; a universe filled with intelligent beings and vast horizons of living worlds where all the evils of overpopulation, racism, war, and starvation were just a food replicator away from solution. In a similar manner, Star Wars was pure entertainment — pure escapism, a return to simpler times,



but more like burying your head in the sand to escape, rather than offering hope to solve civilization's problems.

Now, over the horizon looms a new chapter in the Star Wars saga. **TIE FIGHTER** represents the other side to the heroic struggle for freedom. The Empire shows the benevolent side of all empires. Like the Romans who conquered the known world, the Empire brings order, peace, and prosperity to the enslaved worlds. Look at the struggles in Bosnia, where the people are free of Soviet oppression. Free to participate in a racist war of genocide, and to cause the starvation and misery that only can result from hatred. In some ways the Star Wars Empire, like the Star Trek Federation, provides many more benefits than detriments.



A WINDOW TO THE STAR WARS UNIVERSE

BY BERNARD DY

Tie Fighter provides plenty of action, but for users spending most of their time in Windows, or those disliking joystick exercises, the **Star Wars Screen Entertainment** package is something to consider.

This Windows screen saver module joins the dozens of increasingly popular utilities for Windows. It is compatible with most of the Intermission and After Dark engines, and for Star Wars fans it is almost a must. Collected here are not only humorous sequences where Jawas steal your icons, but also character biographies, starfighter blueprints, poster art, and a complete storyboard/script narration of the first Star Wars movie (including material left out of the film). Even more enticing is the message from George Lucas himself which runs randomly and describes his plans regarding upcoming Star Wars prequels.

All of the modules are accompanied by music and sound effects. The only drawback here seems to be common among most screen savers: they take up a considerable amount of hard drive space and system resources. Users running with the minimum



386dx 33 system will find this software rather slow. In terms of scope, content, and production values, however, **Star Wars Screen Entertainment** is clearly among the leaders in quality for this type of software.

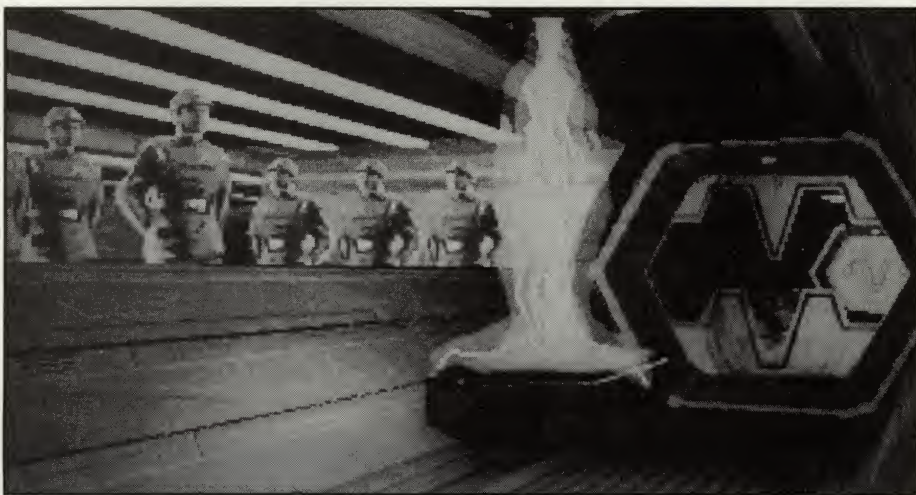
System Requirements: 386/33+, 4 MB RAM, 256 color drivers for Windows, hard drive (10 MB free), MS-DOS 5.0+, Windows 3.1

Sound Card recommended
Price: \$35.9

It is in this spirit that the game Star Wars begins, with the benefits of empire overshadowing the excitement and potential for good of the Rebel Alliance. The Rebel Alliance becomes the evil force, throwing the organized and peaceful galactic worlds into the meaningless chaos of civil war. The Empire is charged with keeping the peace, promoting free trade, and keeping the baser urges of man from dominating his reality.

Empires by their very nature are complex structures, with good and bad people trying to do their job. The good people try to work from within to make a difference. In **Tie Fighter**, you take the role of the good pilot, snuffing out rebellion, restoring peace, capturing traitors, and preserving the lives of the much maligned Empire's leaders. You only get glimpses of the Empire's true nature when you are sent to a penal colony for failure, or witness Darth Vader's cruelty first hand.

Tie Fighter is that best of all sequels. It is the sequel that exceeds the original product in so many ways, becoming a new game altogether, and yet retains



the original character of the original series of X-Wing games: The Farlander Papers, Imperial Pursuit, and B-Wing.

Like Han Solo, who graduated from the Imperial Academy, Luke Skywalker dreamed of going to the Imperial Academy and becoming a Imperial Navy pilot. **Tie Fighter** gives us the chance to live the experience of the Academy and Imperial starfighter. Unfortunately, as an Imperial starfighter, you do not have the option of defecting to the Alliance or playing the new missions from the side

of the Rebel Alliance, which LucasArts game producer Kilani Streicher thought was a good idea.

The previous three games, told from the Alliance's point of view, were severely flawed in the area of playability. Only those willing to spend the time playing the missions repeatedly to figure out how each mission worked, and to figure out which flights of enemy were attacking and destroying mission goal ships that you were charged to defend, would succeed. Unfortunately, the

THUNDERSEAT

**Feedback System Used in
Real F-16 Simulators
Now Available to the Public**

*"A QUANTUM LEAP
in realism!"*

P.C. GAMES

"VIRTUAL UTOPIA!"

Mark Dultz
STRATEGY PLUS

*"A DOUBLE MUST-HAVE.
Anyone who plays computer
games will want this
AMAZING CHAIR!"*

Marc Spiwak
POPULAR ELECTRONICS

*"It made me feel like I was
IN THE COCKPIT."*

Alfred Poor,
COMPUTER SHOPPER

HOW IT WORKS

A 100 watt subwoofer built into the base generates low frequency sound that resonates through the wave chamber hidden inside the chair. Thus you not only hear but FEEL your simulation. Paired with your amplifier, the ThunderSeat makes your favorite flight sim as realistic as it can be without a motion simulator!

OPTIONAL SIDE CONSOLES

put your favorite joystick controls and mouse at a convenient position. Add a keyboard holder and you have the perfect setup for both flight simulation and office work.

**Shake Rattle and Roll
for as little as \$159.95!**

**For a FREE CATALOGUE CALL
1 • 800 • 8-THUNDER**

ThunderSeat Technologies
6330 Arizona Circle • Los Angeles, CA 90045
310 • 410-0022 FAX: 310 • 410-1569

Whether its the whine of your Formula 1 Race Car, the clang of Sword against Sword, or the rumble of your Jet Engines at full after-burner, the ThunderSeat lets you take off to a new level of realism! Compatible with all sound cards and CD-ROM'S



sadistic mission builder team of Dave Maxwell and David Wessman did not understand that not only are "dogfighting skills something that require time to develop," but repeating missions over and over to identify which ships to destroy first is very unrealistic. Apparently playing the games eight hours a day to test playability not only built up fighter pilot skills, but also fostered an unnatural familiarity with the game plot and mission goals that gave the mission builder team a very unrealistic advantage

dimensions of play and various levels of difficulty, by making the game difficulty adjustable to the player's level of play and masochism.

EXCITING NEW FEATURES

New features for **Tie Fighter** include 11 new cockpit fighter control commands that make play easier, four training missions for each of the six Imperial fighters you will fly, three new skill levels from rookie to ace, the ability to send for reinforcements during a

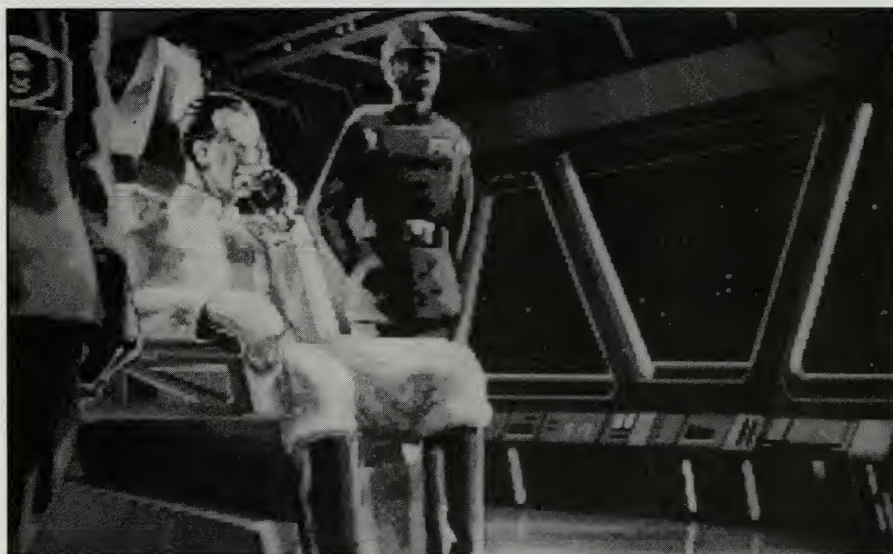
weapon available on certain new ships, component tracking, closest attacker of current target, mission goal display, message log display, resupply ship, reinforcements, and threat display. The tractor beam slows enemy ships, making them easier to disable and destroy. Component tracking targets parts of large capital ships, such as weapons, bridge command, engine, and sensor pods. Once targeted, these ship components can be destroyed, leaving the ship intact, but sometimes with illogical results. In one mission, I shot the engines off a capital ship that I was supposed to disable, but it warped out anyway and I lost the mission. But shooting off the weapons on a capital ship or space platform can be equally rewarding.

One of the most important new commands is the one which identifies the closest attacker of the current target. By entering the mission goal ships into your three target presets, pressing the A-key will tell you immediately who to destroy next if you are to protect the target from destruction. I found myself using this one over and over to great advantage in battles, melting away all my animosity over the several impossible X-Wing missions.

The mission goal display allows the pilot to take a look at a full-screen list of completed and still uncompleted mission goals, making identifying and memorizing mission goals unnecessary. The inclusion of this feature makes one think that perhaps the design team was not totally unaware of the unrealistic and unreasonable requirement that you play the game over and over until the mission goals were memorized. The message log display gives a full-screen, scrollable message log which can be reviewed during the mission to increase the understanding of mission events, even after an intense dog fighting sequence prevented the pilot from reading the message as it came in over the com-link.

Missile reload shuttles add a dimension to the game which has, up to this point, not been possible. Long, extended missions can be set up, such as one training mission where the Tie pilot takes on wave after wave of enemy fighters of all types and skill levels. Certainly, the automatic restoration of a dead or imprisoned character makes the game easier to play and avoids the requirement of cloning characters in DOS and restoring the clone after unsuccessful missions.

(continued on page 68)



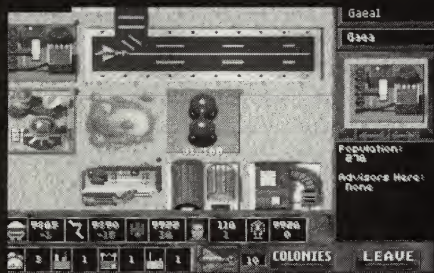
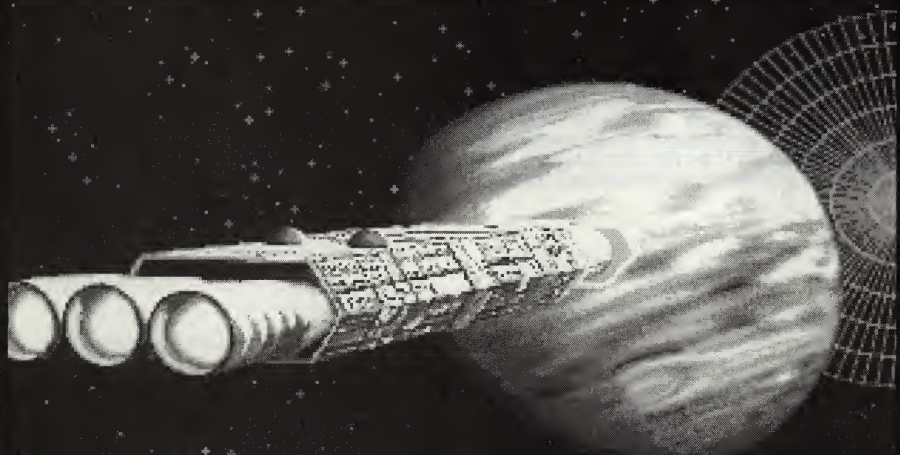
— that of memorizing what to do and when to do it.

Thankfully, the mission design team and LucasArts abandoned their stubborn desire to make the game impossible for all but those willing to play the game for months, and also abandoned their disdain for players who simply wanted to play the game and not become X-Wing fighter pilot and mission goal experts. The new, more sensitive **Tie Fighter** has blossomed into a game with many

mission, the availability of mission goals during the mission, three levels of mission goals, and missile reload shuttles. In addition, missions can be replayed immediately, until you are satisfied with your performance, and completed with an indestructible ship and infinite weapons. The pilot resurrection makes character cloning obsolete.

The 11 new cockpit commands includes normal, two- and four-time acceleration cycling, a new tractor beam

ALIEN LEGACY



BY
BERNARD
DY

"Great. What else can go wrong?"

"They've been hit by meteorites. They're requesting immediate assistance."

I looked at Romanov to see his expression. "Your comment is noted, Advisor. We'll deal with the possible threat as soon as we can."

Romanov appeared resigned to priorities, though it was clear he was concerned.

"Understood, sir. The recon will wait."

Yes, it would wait, but hopefully not too long.

Sound a little like Star Trek or Sierra's own Outpost? It should, as **ALIEN LEGACY** is a space exploration game sharing much in common with them. Given some of the current user disappointment over Outpost, perhaps it is very well that **Alien Legacy** arrives to give Sierra's science fiction fans a more approachable alternative.

In this lengthy game, you are in command of the Calypso, a seed ship launched from Earth to discover habitable sites, and also to deal with an alien threat. Most of your time in the game will be spent exploring, and some of it on researching new technologies for both domestic and military use. There is also an intriguing secondary plot to help direct your efforts when playing.

(continued on page 70)

"Sir," Military Advisor Romanov said, almost apprehensively, "I don't need to remind you about our mission, and..."

"You just did," I interrupted, as I turned to face him. He stood at the left side of the Calypso's bridge, in front of his station. I cast a stern glance his way

to remind him of his place. I hated having to pull rank.

"This increase in evidence we've seen clearly suggests the crew of the Tantalus was at war. The threat is inevitable, and I recommend you allocate research into the new weaponry immediately, and send more ships for recon."

"This threat has thus far been as elusive as any survivors from the Tantalus," I countered, "and my first responsibility is to keep us all alive. Right now, I've got several colonies whose life support systems will fail if we don't get them the resources they need. We also have a cryogenic sleep chamber malfunction on the Calypso. Alien hostilities are the least of my worries. If we don't solve the problems here first, the aliens won't have to kill us — we'll have done it ourselves!"

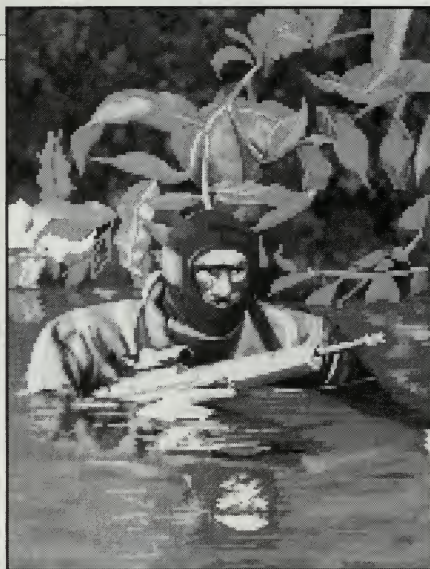
Engineer Lee nodded approvingly. Half of the Calypso's crew was still in deep sleep, at the mercy of the ship's life support system. A recent malfunction left little time for the crew to transfer as many out of sleep as possible before the actual chambers failed.

"There's an urgent message from the colony at Beta 2, sir." It was Navigator Giacomo.

In the last few months many people have developed an interest in squad-level combat. X-Com, most notably, has successfully monopolized the free time of many a gamer. This European import features a gut-wrenching combat model as the glue between different strategic gaming elements.

Which is why it is unfortunate MicroLeague decided to bring **SABRE TEAM** over from Europe at this time. **Sabre** is, by itself, a disappointment without being compared to X-Com. Standing side by side, it withers.

In **Sabre Team**, you command



SABRE TEAM

by MicroLeague

BY BERNARD DY

soldiers in a series of modern missions. From hostage rescue to assault, you will engage the enemy in four-man teams. The problem is, **Sabre Team** is outdated in almost every fashion, and its combat model is lacking far too much to be taken seriously.

Though the graphics appear dated, gameplay is what really counts, so long as the graphics are at least functional. They are. Moving into gameplay, however, reveals more serious problems. To begin with, **Sabre Team** does not have replay value. There are five missions to complete, and there are no new wrinkles in each play. In X-Com, each battle could have different objectives, obstacles, and opponents. Not so here, and worse, only eight men are available to choose from for the entire campaign. If any die in a mission, there is no way to hire replacements. When the eight men are gone, so is the game.

The interface is also mediocre at best. An unwieldy mix of perspectives and unfriendly mouse conventions are in stark contrast to the smooth scrolling screen and color-coded 3-D targeting rectangles of X-Com. To get any idea of what an area beyond the edges of the screen looked like, I had to put a man in movement mode and right mouse click at the edges of viewable area, a jagged method at best. One nice idea was the inclusion of an overhead blueprint map. Viewing it, however, costs you in movement points, which accumulate for scrolling across the blueprint. This does

not make sense; one should be charged a movement cost for accessing the map, not for glancing at it once it is already spread across the lap. It is like getting charged for moving your eyeballs!

Targeting is also fuzzy. The mouse pointer becomes a crosshair, but you are expected to place it exactly over the pixel you want to shoot at. The three-quarter angle perspective sometimes makes this difficult to judge, since aiming at a certain side of the target might help avoid hitting the door jamb partially blocking the line



of fire. The crosshairs do not change color to indicate a favorable shot or target selection, and viewing perspective cannot be altered for direct viewing. Thus, you never know exactly where you are shooting. Better systems handle this by allowing one to select a specific and easily highlighted target and let the computer handle the probability and results of a hit. **Sabre Team's** extra complication is unseemly; these guys are supposed to be marksmen.

Then there's the heart of the game. You start by arming the team, then by progressing into the mission to shoot the bad guys. This is actually fun, with a list

of weapon types in one scroll box, a description of a highlighted weapon in another section, and an inventory list filling out the rest of the arming screen. There could be some drag-and-drop support here to make things easier, but it is functional enough. The problem arises when it comes time to scrutinize the mission types.

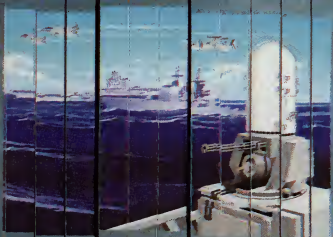
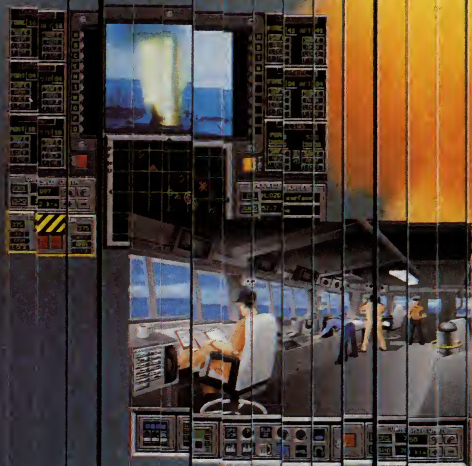
The first mission takes place in an urban combat setting. Inside buildings and passing through narrow doorways, I wanted my team armed with .45 caliber and 9mm sidearms, plus some sub-machine guns and stun grenades. **Sabre Team** offers a variety of sub-machine guns, but misses woefully the mark on handguns; there are none. In addition, while grenades are available, **Sabre** models them very poorly and they seem to have no lasting or area effects. Additionally, you are forced to spend some of your first round of action loading the weapons! Unlike X-Com, there is no automatic loading before combat officially begins, and no way to confirm specific loads until after the scenario starts. These are glaring and inexcusable omissions.

Combat AI is surprisingly capable given the disappointments already encountered. Enemies are always alert to take shots at your team. They are also smart enough to call for help and alert other members of their rabble when you have been sighted. Frustratingly efficient marksmen, they make a quick mockery of your men. Even equipped with Kevlar vests, members of my team died with only two hits, and rarely did the opponent miss a shot. My soldiers, on the other hand, commonly missed what appeared like easy shots, and lodged more than a few slugs into walls and door jambs in the line of fire (which did not always appear obvious when aiming; see above). It often took two or three hits to down my opponents.

In many respects, **Sabre** shares some of the weaknesses of X-Com. Hand-to-hand combat is non-existent, as are what would seem like obvious elements of combat movement: running and crawling modes, and support for the prone position. Unlike X-Com, **Sabre** lacks night combat.

Sabre Team is simply too little, too late, and requires improved details, mechanics, and balance to make it acceptable. It is challenging, but for all the wrong reasons, and thus cannot be recommended for the combat simulations enthusiast. □

WE REGRET THE APPEARANCE OF THIS AD, BUT THE MILITARY INFORMATION IN THIS NEW GAME HAS ONLY RECENTLY BEEN DECLASSIFIED.



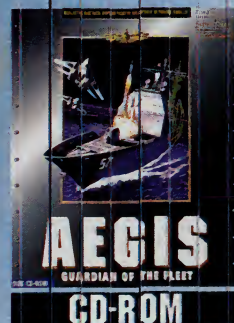
Otherwise, we'd have to ask you to eat the evidence for security reasons.

For a real taste of military action, try leading a navy fleet through heavy Exocet missile attacks in the Falkland War. Or defending against torpedo strikes in the Persian Gulf.

Command an Aegis class cruiser, and all the ships, aircraft and submarines in the fleet. Destroy the enemy in high-tech naval warfare. Rely on state-of-the-art weapons, electronic sensors, artificial intelligence and instinct for survival. And if you're lucky, you will live to do it again.

Introducing *Aegis: Guardian of the Fleet*. Now on CD-ROM. Over 100 missions based on declassified information and actual battles. Live-action video, 3-D

cinematic graphics and CD-quality sound effects put you in the heat of battle, as close to reality as national security will allow!



Visit your local retail outlet or call 800-482-3766 to order. This is not a drill. Repeat. This is not a drill.

**TIME WARNER
INTERACTIVE GROUP**

2210 W. Olive Avenue
Burbank, CA 91506

Software Sorcery

Where Magic is State-of-the-Art!

D4S1 08P4

Software Sorcery. "Where Magic is State-of-the-Art!"
is a trademark of Software Sorcery.



**REVIEWED
BY ERIC
"RECKLESS"
PEARSON**

THE EDGE by Keith Ferris
(Lockheed F-22 advanced tactical
fighter). Original Aviation Art and
Lithographic Prints available from
Keith Ferris Galleries, 50 Moraine
Road, Morris Plains, NJ 07950
(201) 539-3363.



F-117 Stealth Fighter
photo by Hans
Halberstadt/Arms
Communications.



OCE

TACTICAL FIGHT



Today's fighter environment is moving toward high maneuverability and stealth. Ocean captures the planes leading the race to the next generation fighter in **TFX: TACTICAL FIGHTER EXPERIMENT**.

PREFLIGHT MENUS AND MISSION SELECTION

There are six modes of play:
Arcade — No take off or landing, unlimited fuel and armament.



Training — Ten missions to prepare you for flight in the other options. Mistakes are forgiven regardless of their severity. Even missions ending in death will be re-flown.

Simulator — Choose a theater, and fly the prescribed missions. Results in the simulator will not be added to the pilot's of flight time and score (but there are no penalties for failure either).

Tour of Duty — Sign on with a squadron and fly all assigned missions in one aircraft type. You load your own weapons, but have no choice in the targets, waypoints or time of the mission.

Flash Points — Join a response team that will fly missions in any aircraft. You don't control any part of the planning for these missions.

OCEAN'S TFX FIGHTER EXPERIMENT

METALTECH™

Earthshaker

One apocalypse later, it's EarthSiege. Your squad of HERCs prowls a target-rich environment, ready to deliver some heavily mechanized payback. But beware—the Cybrids are an intelligent and relentless enemy. You'll constantly have to train new pilots, develop new tactics, and acquire new weapons—like EM Pulse Cannons, optically guided missiles and Electron Flux weapons—to secure an advantage. Or your burnt-jelly remains won't fill a teacup.



Dynamix®
PART OF THE SIERRA FAMILY

*Magnificent light-sourced texture-mapping
with fluid 3Space animation*



The mission generator guarantees a restart isn't just a replay

UN Commander — Control all aspects of mission planning and weapon loading before flying the mission.

GRAPHICS

All planes in **TFX** share the same cockpit. This doesn't present any difficulty, but the F-117 should not have indicators for afterburners. The detail in the three Multi-Function Displays (MFDs) is adequate for all displayed data except the moving map. The MFDs are capable of displaying several different screens, though the center can only toggle between two radar modes and the moving map. To compensate, there should be a zoom feature for the map. The Heads Up Display (HUD) has sufficient information for Air-to-Air and Air-to-Ground operations, but it is lacking in the Navigation mode. There is no waypoint pipper, nor is there a display of time or distance to the waypoint. That information is crucial for proper navigation of waypoints. Navigation can be accomplished by turning the plane until the direction line on the moving map points toward (or overlays) the desired point on the map. The heading

scale on the HUD shows only the four points of the compass (0, 90, 180, 270) and it is compressed so that you see about 55 degrees on either side of your current heading. I believe this was done to help people who are not familiar with numerical heading scales. For example, a heading of 315 is northwest.

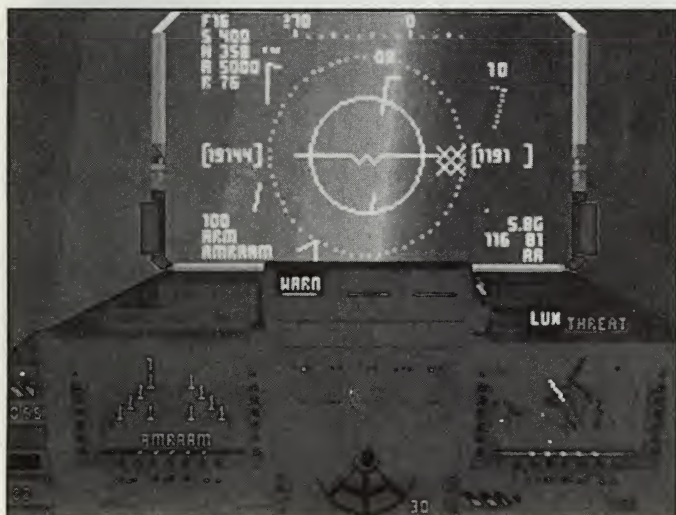
Someone who doesn't know that would be able to determine it if they saw a 270 on the left of the HUD and a 0 on the right. But the compression **creates** three problems. First, the compression of the scale squeezes out the resolution, so that if AWACs calls out a bandit at 63 degrees, it is hard to tell when you've reached that heading (not really much of a problem with the broad sweeping radar). Second, because of the compressed scale, it is hard to get a feel for the rate of a turn (in degrees per second) because the graduations move more slowly. And third, it gives the impression that your field of view through the HUD matches the heading scale on the HUD. While the HUD indicates a cone about 110 degrees, your true field of view through the HUD is more like 30 degrees.

TFX supports panning the cockpit view in either incremental steps or in a smooth rotation. The incremental steps are straight forward two o'clock, four o'clock, straight back, 8 o'clock, and ten o'clock. Switching views from four o'clock to eight o'clock rolls the view counterclockwise to pass through the front view instead of taking the shorter (but impossible) route through the straight back view. The virtual cockpit view allows smooth panning but it allows the head to pass through the six o'clock. It also allows a quick view of your own lap, but that view is achieved by rolling your head **back** until it comes up through your stomach (try that with your virtual reality headset). This view does not allow the HUD or the MFD's to be read. Those areas of the screen are filled with phony information which is too fuzzy to read, but it is clear enough to see that the data is not changing.

Ocean added a realistic twist to their virtual cockpit mode. When you start a roll to the right, your head wants to maintain the level horizon, so the plane actually appears to be rolling under you for the first half second. After that, your



F-117 Stealth Fighters photo by Hans Halberstadt/Arms Communications.



INTERCEPT

The Journal for Combat Flight Simulation Pilots



Each Issue Features:

- Industry rumors and news
- Detailed Software reviews based on more than 50 flight hours
- Tips and Tactics from the reviewer and other industry experts
- Technical Briefs on actual aircraft and weapon systems

Other Articles have included:

- Hardware reviews
- Sneak Peeks of soon to be released software
- "State of the Industry" Report compiled from Reader Surveys
- Flying the Air Force's F-15E Simulator
- Falcon 3.0 Head to Head tournament

Other Benefits:

- Free-listing of Sim-Pilots in your area
- Discount prices on ThrustMaster Hardware

Subscription (6 Issues)	Sample	Send Check or MO to:
US \$20	\$4.00	SIMCAP, Inc.
Canada \$24	\$4.50	20 Lafayette Ave
Overseas \$28	\$5.50	Kingston, NY 12401-4408

Checks must be in US Currency, drawable on a US bank

Name		(please print)	
Street		Apt No	
City	State	Country	Zip Code

head catches up with the roll, and you stay oriented in the roll.

The outside views of the three featured planes are excellent. There is an option to view the aircraft with ordinance in place on the pylons. If you are flying the F-22 or the F-117, **you will see the bay doors open as the weapons are released.** The views of other aircraft are good when you get up close. From a distance, you can view enemy aircraft with the F9 key. This view presents the selected aircraft in a very low resolution. When I first saw the enemy this way, I thought that the close-in encounters would be visually boring, but the planes in visual range have detail nearly as good as **TFX's** featured planes.

The **TFX** world has five theaters around the globe: Somalia, Columbia, Libya, Yugoslavia, and the South Atlantic. Each theater is 600 miles by 600 miles, and they are accurate to eight feet. Cities

are represented by many buildings, sprawling over several miles. The cities light up with anti-aircraft fire once the defenders realize they are under attack. Air bases have lit runways, taxi-ways, and hangars. Industrial targets have a variety of large buildings and smoking stacks.

Ocean's representation of clouds is the best of any simulation. The bottom of a cloud bank is smooth, dark, and at a uniform attitude while the top is puffy, white, and has peaks that reach hundreds of feet above its neighbors. The irregular surface on the top of the cloud deck is a series of light gray and white circles. The only problem with the clouds is that the plane **appears** to move past them too slowly. This is because the clouds are actually very large (up to a quarter mile in diameter) but distant, so the relative motion is slight. During stormy weather, there is precipitation and lightning flashes below the clouds, and clear sunny skies above.

SOUND SUPPORT

The pitch of the engine sounds give a clear indication of current RPM. The afterburner stages kick-in with a soft boom. Lock-on indicators for air-to-air missiles buzz intermittently for about 30 seconds then quit even if they remain locked onto a target. That sound drop out is a blessing as the lock-on indicator is annoying. I often switch to a weapon type that is out of range (or to guns) in order to kill the lock-on sound until I am ready to fire.

There are limited digitized voice messages:

"Tracking" — the selected weapon is locked on.

"Looks like the lizard" — bogeys identified as bandits.

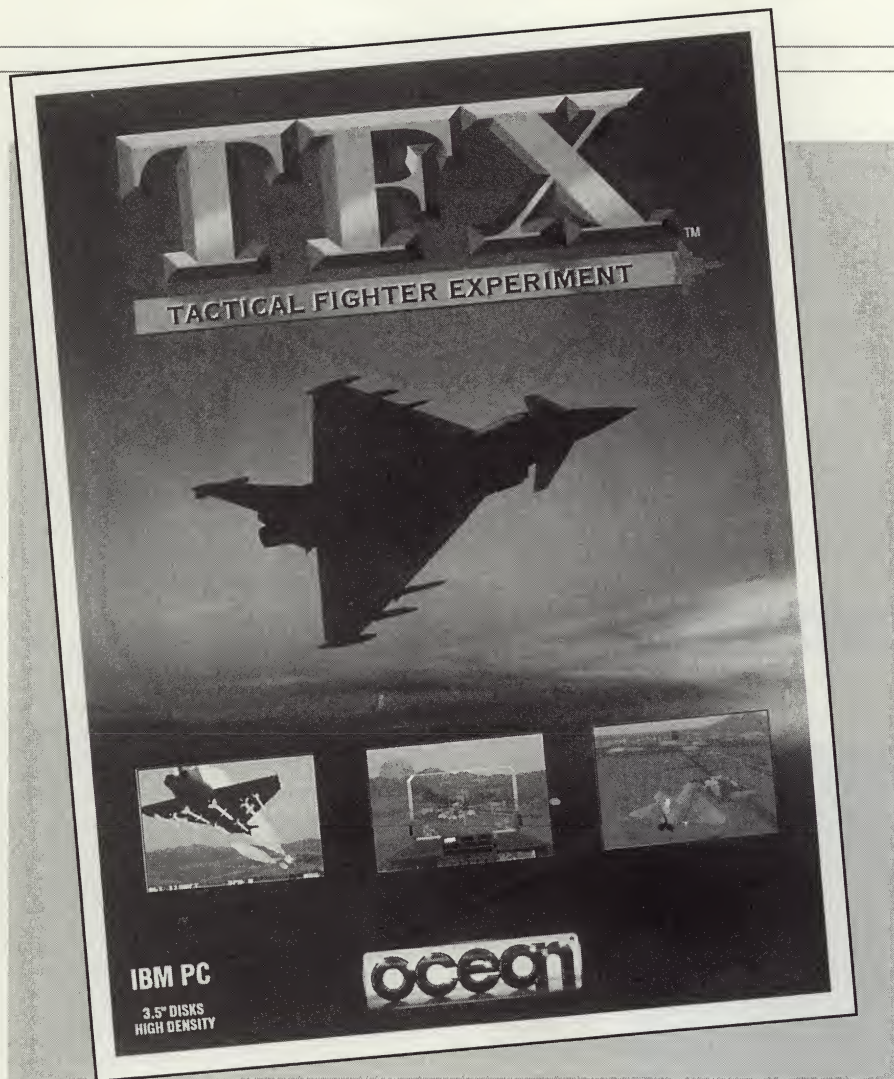
"Good Kill" — congratulations on a kill.

"Pull Up" — Low altitude warning from the female voice in the cockpit (affectionately known as "Bitchin' Betty").

Bandits are called out by AWACS with



TFX has the best air-to-air refueling of any simulation!



heading and altitude. During missions with strict rules of engagement, AWACS will clear you to fire at some point in the mission, but that message appears in the text message box. I'd prefer to get that message audibly so that I can continue to concentrate on the bandit.

Ocean added the sound of grunting exertion of a pilot fighting G's when the G-force approaches nine. It is accompanied by the visual graying and finally black-out.

INTERCEPTION AIR TO AIR

The F-22 and the Euro Fighter can carry a variety of air-to-air missiles. The missiles are **very** effective. An enemy plane will occasionally spoof a missile, but that is the exception rather than the rule. The deck is definitely stacked against the non-UN forces. Their missiles are so easily fooled that I rarely use more than three of my expendable countermeasure packages (chaff or flares) during a mission. The SAMs (surface-to-air missile) are also ineffective.

The enemy pilots possess poor artificial intelligence. They do not appear to work in teams during an engagement, and they

are not aggressive enough to make up for the fact that they are working individually. If an engagement gets into guns or short missile range, the enemy moves are fun to watch, but an accomplished flyer will have no difficulty keeping the bandit out in front. Contrails will come off his wingtips during heavy maneuvers. The enemy is smart enough to make good use of countermeasures, but they are not very effective (the graphics for the flares are nearly a match for photographs of the real thing). Even if you make an error and allow the

bandit to get behind you, he will be unable to stay there long enough to be a real threat.

TFX does not allow wingmen. Given the imbalance against enemy aircraft, there is no need to bring the extra firepower and tactics that a wingman would allow. There are other friendly aircraft in the theater, and occasionally you may cross paths with other fighters. I have had occasions where friendly missiles appeared from beyond visual range to kill a target I was tracking (also

2 GREAT FIGHTER VIDEOS



THE FIGHTER CORSAIR

Strap in for this video because from start up to shut down the thrills never stop. When famed warbird pilot

"Howard Pardue" hits the switches and brings the Pratt and Whitney 2250 horsepower engine to life, your senses will tell you this is no ordinary warbird. Pardue takes you through high-G aerobatics and low level passes at over 400 mph.

THE P-51 MUSTANG

This video for Warbird fans puts you right in the cockpit at over 300 mph. The sleek and powerful Mustang was the most popular and most-loved fighter of WWII. Hear the sweet sound of the 1500 HP Rolls Royce Merlin engine as pilot Jay Cullum performs exhilarating aerobatics and low level passes. When this video flight ends you'll be screaming for more.

Each video is only \$19.95 plus \$3.75 S&H or buy both for just \$35 plus \$4.75 S&H. To order call (800) 770-0747. Also order our 90 min. "Video Catalog" with "previews" of over 20 other exciting aviation videos for only \$9.95.

(800) 770-0747



VC Marketing, 40 Kitty Hawk East
Richmond, TX 77469
(713) 341-6342 TX Res. Add 7.25% Tax.



HEAVY METAL THUNDER

- ➔ **The BEST "Crash & Burn" video ever made**
- ➔ **Billions of dollars of jet and rocket destruction**
- ➔ **F-86s, F-100s, F-104s, helicopters, and more**
- ➔ **A must see video for all aviation fanatics**
- ➔ **Unbelievable sound effects and music**
- ➔ **If you get only one video this year, this is the one**



ORDER NOW



only \$19.95

Add \$3.50 postage/handling
Calif. res. add \$1.65 tax

MAIL YOUR ORDER TO:
Afterburner Enterprises
P.O. Box 7310
Beverly Hills, CA 90212

at long range). I have not ever been involved in a dogfight within visual range of an allied fighter aircraft. Some missions involve escorting transports or bombers. During those missions, the escorted aircraft may be in visual range during a dogfight, but they are unable to assist.

Some theaters have strict rules of engagement which prevent you from firing until fired upon (or given permission by AWACS). That situation adds more excitement to the mission since you often close to within 15 miles of the bandit before being allowed to engage.

The radar in **TFX** allows any target within a 50-mile radius to be tracked regardless of whether they are in front or behind your aircraft. Even the next generation fighters will not have this type of omni-directional radar. The radar

are only effective when the enemy plane is flying straight and level (a no lead situation).

The display which looks like a threat indicator is called a form of radar and the manual says that your aircraft is emitting radar energy when that screen is selected. Threat warning systems are passive (non-emitting) receivers only, so a TWS (Threat Warning System) should have no effect on the stealthiness of an approach. Threat indicators really are omni-directional (as Ocean indicates), thanks to the multitude of radar receivers on the wings, tail and fuselage.

INTERDICTION AIR-TO-GROUND

TFX represents next generation fighters and the current F-117. Desert

Storm showed how effective precision bombing could be using "smart" weapons. As a result, all but three ordnance types carried by the planes in **TFX** are guided

(smart). The two anti-radiation missiles guide on emitted radar from ground sources. The laser-guided bombs and the Maverick missile track on reflected laser light. The laser light source in **TFX** is always from the delivering aircraft (though other methods are actually available). The laser light is directed using the designator pod (Z key). The view through the designator can be panned, elevated, and zoomed. Once a target is locked, the pod's gimbal mechanism allows the laser to maintain a lock even if the aircraft has passed the target.

The dumb weapons are the free-fall MK 82 bomb and the Durandal and CMB 18 anti-runway weapons. These are delivered by gut feeling, since the appropriate computer-assisted symbology does not appear in the HUD.

Ocean's F-117 is the best simulator of the F-117 available. Its performance is poor, it isn't completely invisible, it has limited capacity in the internal bay, and it can't engage air-to-air targets.

SPECIAL FEATURES

TFX has the best air-to-air refueling of any simulation (though few have tried it at all). You have to bring your aircraft behind the tanker, matching altitude and heading, and your speed must be the same or up to 20 knots faster than the tanker. With a little practice, it's pretty easy. This feature is essential to the short legs of the Euro Fighter and it adds an interesting (though less necessary) waypoint for the F-22 and the F-117. The Auto Land feature (Alt L) will work regardless of how far you are from the runway, so you can really allow your fuel state to get dangerously low without fear of a flame-out.

Ocean represented each aircraft with strengths and weaknesses. The F-117 owns the night, but is sluggish and unable to fend off fighters. The F-22 has great range, speed, and maneuverability, but limited hardpoints for ordnance. The Euro Fighter is small, agile, and carries plenty of ordnance, but it gulps fuel from its small internal tanks. Its range can be augmented by external tanks at the cost of two less hardpoints for ordnance.

TFX uses a forced training mode to qualify a pilot for duty in the combat scenarios. That requirement can be bypassed by pressing Ctrl-Enter instead of just Enter when signing up a new recruit.

Mission planning includes a zoom to the theater map. Points can be viewed from a rotating 3-D perspective from any altitude from 400 to 50,000 feet. The mission briefing for some missions is given by a cartoon-like image of an Air Force general with an animated jaw as text appears at the bottom of the screen. This feature may be appreciated by younger players, but adults will find it silly.

DEBRIEF SUMMARY

Ocean's implementation of in-air refueling should start a trend. Their rolling virtual cockpit is also an improvement over existing virtual environments. The limited fuel capacity of the Euro Fighter make energy management an important consideration during its mission. Realistic radar performance and more capable enemies have to be added as a menu option in order for **TFX** to appeal to the upper end of the flight simulation market.

Eric Pearson is the chief test pilot for SIMCAP — the Simulation Combat Air Patrol. Portions of this article appeared in the September/October issue of **Intercept**.



should cover a cone in front of the plane only. Ocean represented the correct pattern in the radar display, but failed to disable tracking targets that are off that screen. The radar has a toggle for range, but it only affects the range on the display, not the range at which targets are detected and tracked. There is no adjustment for radar elevation control. In **TFX**, the same omni-directional horizontal pattern is extended into the vertical to find targets regardless of their altitude.

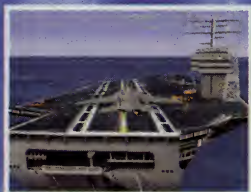
The Lead Computing gun sight does not clearly indicate when to fire. When a gun sight is linked to the tracking radar, the range, speed and direction of the target are all fed into a computer which determines how far ahead to lead the target. If you can maneuver the gun sight reticle (the circle) over the target box, then the lead is right and the shells should hit the target if it is in range of the gun as indicated by the heavy border around the reticle. In **TFX**, lining up the reticle and the target box

U.S. NAVY FIGHTERS™



SEE MIG DIE

This first PC CD release in Electronic Arts' Air Combat Series features the most advanced simulation, audio, and graphics technologies. You'll experience riveting, realistic air combat action, and an exacting attention to military aviation detail.



- **DESIGNED BY THE BEST:**

The award-winning creators of Chuck Yeager's Air Combat™.

- **FIVE FIGHTERS:**

F-14 Tomcat, F/A-18 Hornet, F-22 Lightning II, A-7 Corsair II, SU-33 Flanker.

- **TOTAL IMMERSION:**

All the sensation of modern air combat with full texture-mapping, bit-mapped animations, digitized explosions, video briefings, and 4-track stereo sounds including spoken audio.

- **OPTIMIZE IT:**

Multiple graphics options and selectable resolution modes for MAX performance.

- **4 WAYS TO PLAY:**

50 Single Missions, Tour of Duty with Carrier Wing Command, Quick Mission Builder, Pro Mission Builder.

- **CHECK SIX? CHECK THIS:**

Rear view mirrors, automatic "Tracking view," pop-up windows, multiple external views for maximum situational awareness.

*Hi-Res Screens Shown. Actual Screens May Vary. U.S. Navy Fighters, The Air Combat Series, and Chuck Yeager's Air Combat are trademarks of Electronic Arts. The Electronic Arts logo is a registered trademark of Electronic Arts.



ELECTRONIC ARTS®

AIR COMBAT SERIES™

F-16 COCKPIT SIMULATION SYSTEM STARTS TAKEOFF ROLL

BY JIM
BENDER



VACS

If you've ever wondered how you could make a business out of flight simulation, a product currently being brought to market by Applied Emerging Technologies International may have just the answer. **VACS** the **VIRTUAL AIR COMBAT SYSTEM** is the first-ever mobile fighter cockpit simulator designed specifically for the exploding location-based entertainment marketplace.

President of the Irvine, California-based company, Martin Arant, recently explained the **VACS** concept. "Until now, flight simulation entertainment cockpits have been built for installation in major amusement parks or have been exclusively designed for use in large flight simulation entertainment complexes. These systems all have several things in common. They require large and expensive hydraulic systems for their operation, and they typically take up a lot of real estate, to say nothing of the initial capital acquisition cost. **VACS** is different because it was designed and built from the ground up as an add-on attraction that can be incorporated into any existing business which has a few square feet to spare. The lightweight design allows **VACS** to utilize standard electrical motors for motion control, negating the need for unreliable and expensive hydraulic systems."

Arant believes his primary market for the product will be existing service-oriented business: casinos, computer

retail outlets, bowling alleys, theme restaurants, and other establishments which cater to the public. "Setting up a simulation center in an existing business is an excellent way to create a new revenue source, as well as enhancing revenues of the establishment's existing products by increasing patron traffic," said Arant.

The small footprint and lightweight design of **VACS** allows for the degree of mobility necessary for easy transport and installation. "The motion base is mounted on a caster wheel system and the simulator can be easily moved and set up by two individuals. This also makes it the perfect attraction at events such as airshows, industry trade conventions, and corporate parties. We've already have serious inquiries from individuals who want to purchase **VACS** just to work the airshow circuit," Arant explained.

The **Virtual Air Combat System** is based on the F-16 Fighting Falcon and authentically replicates the systems found in the actual fighter cockpit. Everything from the shell, which is patterned after the size and shape of a real F-16, to the authentic-looking aircraft switch panels and controls, are designed to portray a sense of realism. The same type of infinite focal-length collimating display used in large commercial simulators projects the out-of-window view.

The simulation software driving the **VACS** cockpit system is a commercially-

licensed version of the award-winning Falcon series by Spectrum Holobyte, one of the largest publishers of flight simulation software in the world. "Our extensive exit surveys of customers from our prototype products have convinced us that the public appreciates authenticity. Most competitive products are 'dumbed down' so the average customer can master supersonic flight and air combat all on the first try. Large lighted buttons and simplified flight models may do well in coin-operated arcade games, but our product is geared towards a more mature audience. There are large numbers of people that will invest in multiple sessions in the **VACS** in order to become skilled at flying this complex and challenging simulator. Even 'one-timers' appreciate what it's like to fly a real jet fighter, even though they will not be able to master all the systems in the simulator during their flight," Arant said.

I asked about the company's plans for the future. "Right now we're in the process of setting up our distribution channels for the product both here in the United States and abroad," said Arant. "The **Virtual Air Combat System** will be only the first in a series of realistic aircraft simulation products geared to the location-based entertainment market."

Applied Emerging Technologies International can be contacted by writing to 4330 Barranca Parkway, Ste. 101-212, Irvine, CA 92714, or by calling (714) 551-0372. □

When **FLIGHT SIM TOOLKIT (FST)** was released two days before

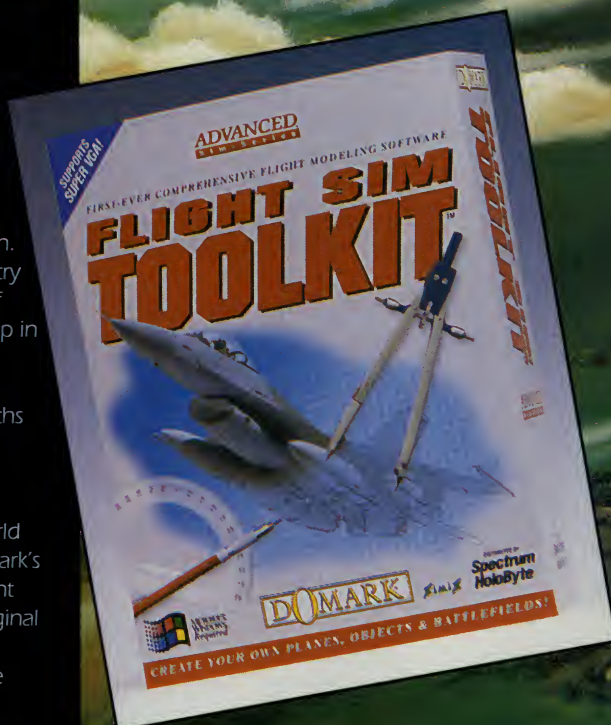
Christmas in 1993, it caused a sensation. Users and magazines all over the country started extolling its virtues. A wish list of add-ons and wanted features sprang up in the electronic and snail mail boxes of Domark, Spectrum Holobyte, and the electronic flight sim forums. Eight months later, **WORLD WAR II (WW2)** was released as the first in a series of FST enhancements.

Not to be confused with QOP's World War II: Battles of the South Pacific, Domark's **WW2** contains two fully functional flight simulator scenarios based upon the original FST. **WW2** does not contain the FST Windows-based terrain, ship, and battle editor that caused all the sensation, but Domark will give purchasers of both **WW2** and **FST** a \$10 rebate on both games, and this, combined with the low \$24 suggested retail price for **WW2**, should be enough to satisfy the most frugal buyer.

Just look what you get with the original **FST**. A fully functional Windows-based scenario editor, which allows you to customize the shape, color, cockpit instrumentation, flight model, and outside world. Those computer jocks who find the current crop of flight simulators to be unsatisfactory can now quit their belly aching and create their own world to their own specifications.

FST allowed these amateur flight sim producers to use the included computer aided design (CAD) program to custom design shapes, including planes, trees, buildings, ground vehicles, and aircraft. Ordnance for both friendly and enemy aircraft included cannon, bombs, anti aircraft artillery (AAA), air-to-air (A-A) and air-to-ground (A-G) missiles, rockets, and surface-to-air missiles (SAMs). Ground-to-air ordnance can be linked to radar. Both civil and military simulators are supported.

WW2 has added several new features that will make the old **FST** play much better, and add a lot of fun to the product. The new game uses teams, torpedoes, airborne starts, carrier landings, improved dogfighting, improved flight models, bomber class aircraft, more movement to the flaps, fixed AAA, "in-game" map, padlock view, and the ability to customize aircraft produced by friendly and enemy hangars. Another new feature is the smooth interface which starts the game, and selects the aircraft, the side you want to play, the difficulty level, and the scenario



from the two new flight sim worlds: D-Day and Midway. While these enhancements do not even come close to fulfilling the extensive wish list of needed features, **WW2** represents a significant enhancement over the original **FST**.

One of the most important new features, according to Bryan Walker, the new flight sim guru at Domark, is the ability

to play teams. The new game allows you to have friendly forces both in the air and on the ground that will assist you with your mission. Now you can select red, blue, or no team at all. If you select red team only, blue team will fire at you, and vice versa. If you select no team, no one will fire on your player. The teams eliminate the you-against-the-world format but still do not incorporate



BY AL
GIOVETTI

FLIGHT SIM TOOLKIT

and

THE FIRST FLIGHT SIM TO CAPTURE
THE FURY OF D-DAY AND MIDWAY

WORLD WAR II

PAINTING: BREAKOUT AT NORMANDY by B. Michael Hecht. For more information on this limited edition print and other works by the artist, contact B. Michael Hecht Studios, P.O. Box 7976, Huntington Beach, CA 92615-7976, (714) 960-6640.

communications with AWACS, friendly and enemy aircraft, and command or surface vessels, vehicles, airports, and installations. The lack of communication and cooperation make this flight simulator less enjoyable than F-14 or 1942, where you can communicate and coordinate attacks.

WW2 expands on the **FST** artificial intelligence (AI) routine that learns from its

mistakes. Bryan Walker, a veteran military pilot, and others, have tweaked the AI routine so that it has more vertical maneuvers, making the AI more three dimensional, as opposed to the flat AI routines seen with most other flight simulators. The more aggressive and successful pilots learn that the vertical dimension is often neglected, and gives a quantum leap in advantage over the novice pilots.

An aircraft blind spot has also been programmed into the AI. A plane sitting in the blind spot will only be detected by the tracer rounds, which work the same for both enemy and friendly planes. Additionally, the AI accommodates four difficulty settings from Arcade, giving your plane gravity defying abilities to the Veteran mode, which points out the lethal

nature of flying in combat and the real difficulty that **WW2** pilots had flying these hard-to-maneuver planes.

An error in the manual topic "Other Aircraft Characteristics" states that "ammunition" can be edited. While bombs and other ordnance can be edited, cannon ammunition **cannot** be edited. The authors plan to correct this error in future releases.

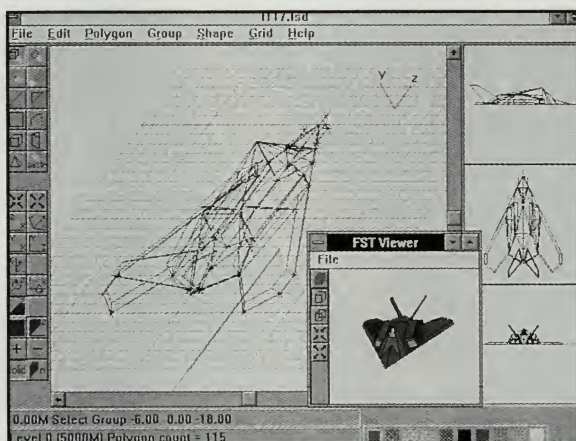
Torpedoes have been added to the available aircraft ordnance of cannon, rear gun, A-A, A-G, Iron Bomb, and Cluster Bomb. Torpedoes must be dropped from an altitude of under 100 feet and a speed less than 100 knots. An useful feature is to obtain a missile's-eye view (Alt-M) to check and see if the torpedo armed and is not damaged, since Alt-M will only work on undamaged armed torpedoes.

The flight model, FLY.EXE program, has also been improved not only with enemy and friendly AI, but now the engines have a greater range of power, permitting heavier aircraft and shorter runways, such as aircraft carriers. I found the aircraft roll rates to be much too fast, with little inertia when flying on the Arcade difficulty setting. One of the great features of **FST** and **WW2** is that you can edit any flight model that you do not like to customize it to your specifications, whether you want the models to be realistic or fanciful. You can edit the roll rates with a text editor, or use the **FST** Windows CAD program to edit the correct .FMD file. For example, the Wildcat Arcade flight model data file is WCATARC.FMD.

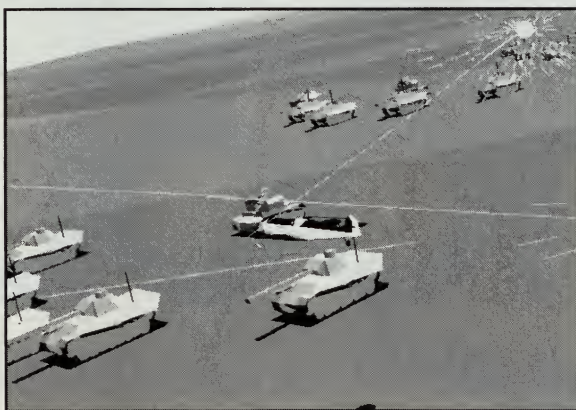
The Arcade models are more fun and supremely responsive, so much so that I kept overshooting while aiming the plane at enemies. Regardless of the difficulty level, the planes retain their overall characteristics. For example, the Spitfire is more responsive and tighter turning than the Me109 or FW 190, while the Me109 climbs faster and steadier. The Zero out-turns everything in the game. The FW 190 has the highest roll rate. The easier difficulty settings merely make the enemy easier to hit, the Allies harder to hit, and your plane more maneuverable.

The graphics used throughout the game are filled polygons. While bit-mapped graphics may be more attractive, bitmapped

graphics slow down frame rate dramatically. Frame rate can be a problem — even with my 486 DX 50 MHz machine with one Mb of video RAM, there were times when the flight became jerky for a few seconds, depending upon how cluttered the screen was with animated objects, but for the most part the planes flew smoothly and effortlessly with seamless animation. In order to increase the frame rate dramatically without changing the looks of the game much, turn detail off. This will eliminate the simulated earth curvature and will add two frames per second to the frame rate.



Flight Sim Toolkit by Domark allows you to design your own Stealth Fighter and much more!



The light-sourced, filled polygons number at 100 per plane for Midway and 200 per plane for the D-Day scenario. Future versions of the game are planned with even more polygons per plane. Dogfight, the next planned upgrade to **FST**, will have 400 to 450 polygons per plane. Two hundred polygon planes for Midway can be obtained from the Domark BBS or Domark areas in the major online services.

The polygons are represented in 800 x 600 x 256-color mode on the computer, but can be as high as 1024 x 768 if you disable the cockpit. The game contains the 1024 x 768 x 256-color images but the design team had problems setting up the cockpit graphics in this mode. The 1024 x

768 x 256 mode requires the new S3 chipset card, such as the Diamond Stealth 64 DRAM-based card, Orchid Fahrenheit, Cirrus Logic, Matrox 64, or ATI 64 cards. Edit the SWII.FGD file to change the cockpit command to NIL in the D-Day directory; then use the following commands to execute the 1024 x 768 x 256 mode: FLY-S2-WDDAY.AIA for the CD version and FLY-S2-W-DDAY.AIA for the disk version.

Domark claims the best card currently available to run **WW2** is the \$249 Stealth 64 with two megabytes of video RAM. Cards with over two megabytes of RAM will not work better than the two megabyte cards, since no programs today take advantage of the additional RAM available on the new PCI cards.

FST had its problems in that while you could customize missions from the mission editor, the game did not have an automatic mission generator with mission objectives, points, and an automatic end. **WW2** does not have an automatic mission generator or a point system for mission goals. Now the mission is setup with a script written on a text file, but new enhancements are in the works for the future.

Explosions look much better in the upgrade than the original due to the use of more polygons and an increase in the color cycling rate in explosions. The explosions have more dark areas, density, and substance. Bit-mapped explosions are far too costly in frame rate for them to be used in **FST** or its upgrades.

The new bomber class of aircraft is basically the old transport with the ability to overfly a target in its path and drop bombs. The bomber will deviate plus/minus eight degrees from its course and overfly the first potential enemy ground target it reaches. The bombs drop while the bomber is over its target, so that more bombs drop if you fly slower over the target. In the **FST** Kursk add-on, planes will be modified to strafe targets, so that P-38 Lightning, A-26 Invader, and B-25 Mitchell fans will be able to get their planes to perform the strafing maneuvers for which they are known. B-52 bomber shapes, available separately, can overfly targets and drop devastating bomb loads.

The fixed AAA were developed to prevent instant vaporization of the player aircraft by AAA that would track the player when he came into range. Fixed AAA is not the best solution, but it does provide visual representation of AAA filling the sky without undue risk to the player. The game uses few tracking AAA to provide a realistic but playable level of risk. Should one want more lethality or realism, simply replace the fixed AAA with tracking AAA.

Another nice feature of **FST** and all of its

add-ons is an integral extended memory manager that keeps the low memory requirements of the executable program down to phenomenally low levels. The most active RAM that any scenario requires to fly is less than 500 kilobytes. Some scenarios require as little as 380 kilobytes to fly. The CD-ROM version of **FST** and **WW2** did not require any enhancements to run with the CD-ROM drivers. The CD-ROM and disk versions of the program are identical. The advantage to the CD-ROM version is the convenience on installation, and that the program can run 100% from the CD-ROM without using any hard disk space.

Currently in production is a Battle of Kursk and Battle of Britain scenario upgrade that should be available by press time, at a suggested retail price of \$24.99. Kursk will have tank battles, AA vehicles, and strafing bombers, including the Stuka, Henschel 129, and Stormovik IL2. The tank combat intelligence will allow the tanks to fight in red and blue teams, follow a path without deviation, and have active or inactive paths, which will allow the tanks to have multiple modes of combat effectiveness. You can turn lead computing off on the tanks to reduce their accuracy.

The padlock view, new for **WW2**, is not very useful in locating enemy fighters. The padlock view does not have any means to orient the pilot to where the padlocked plane is with regards to the attitude of the pilot's plane. Domark realizes this problem and is attempting to provide greater situational awareness to the padlock view. Unlike the Falcon 3.0 padlock view, this is simply a full-screen view with no markings to indicate which direction the padlocked enemy plane is with respect to the piloted plane.

Situational awareness is one of the main problems with most flight simulators, and the views given should effectively compensate for the lack of "you are there" ability to see what is around you. The computer monitor limits peripheral vision and the feeling of where you are with respect to the enemy. **WW2** has 16 separate views to enhance that experience. These **WW2** views are not as sophisticated or as effective as the virtual cockpit seen in 1942: The Pacific Air War or the previously mentioned Falcon 3.0 padlock view. Domark hopes to upgrade and increase the views to make them more useful.

The in-mission map has helped to increase situational awareness, especially in the Midway scenarios where the red dots on the map represent enemy planes. The D-Day scenario has far too many red dots to be useful in locating enemy planes. The map needs to have different colored dots

for air and ground targets. Domark intends to put the player's plane in as an arrow on the map rather than the white dot they now use in the center of the screen.

Most controls work with **WW2** including rudder pedals, the Thrustmaster WCS and FCS, and the rugged CH Flightstick Pro. PHX controller files are being prepared for the Phoenix and should be available by the time this is printed.

Other enhancements planned for Dogfight include saving plane characteristics to a text file, and dumping the text file to a game update or text display when the plane is killed. The scenario editor will have points for each mission goal object which will be dumped to a routine to record the points earned for each kill and the total points for the mission. Linking these mission goal files with an objectives option will allow the player to end the mission successfully or unsuccessfully, depending upon what mission goals are completed.

Besides the planned radical improvements to the flight model editor for Dogfight, Dogfight will have an AI editor for enemy and friendly planes, with statistics for awareness, maneuver preferences, marksmanship, G-tolerance, and control touch. A pilot with good control touch will be able to fly a plane beyond its normal limits, while poor control touch pilots will never achieve the flight specifications.

Dogfight will also provide head-to-head play over null and phone modems and networks. Finally, **FST** and **WW2** pilots can test their skill and plane designs against human opponents, or fly with other humans to cooperate on missions. An **FST** helicopter simulator upgrade disk will be available after Christmas. There is even a possibility that an **FST** Vietnam simulator may come later. All in all, the future looks bright for Flight Simulator fans.

Product Category: Flight Simulation
Computer Type: IBM PC/Compatible, 16 MHz 386 or better
Memory: Minimum 2.0 Mb RAM, DOS 5.0, 500 Kb of free RAM, recommended 4.0 to 8.0 Mb RAM
Medium: 3.5-inch high density disk and CD-ROM
Copy Protection: None
Suggested Retail Price: \$24.99
Hard Disk Drive: 10.5 megabytes of free hard disk space
Input Devices: Joystick required
Developer: Domark, 1900 Norfolk Street, Suite 110, San Mateo, CA 94403
Order line: (800) 695-GAME, technical assistance: (415) 513-8933
Distributor: Spectrum Holobyte

NEW!

Military Dynamics, Inc.
proudly presents its

GREAT W. WAR II FIGHTER & ATTACK PLANE COLLECTION



A Collector's or Military Enthusiast's Dream!

- ▶ 30 Famous Planes From 7 Countries
- ▶ Ready-made Display Models
- ▶ Finely Detailed in 1:72 Scale
- ▶ In Solid Plastic
- ▶ Authentically Painted and Decaled*

*Also available unpainted

A Top Quality, Made In The USA Product

Send for free catalog to:
Military Dynamics, Inc.,
 P.O. Box 9040-142, Mission Viejo, CA 92692,
 or call 1-800-356-3600 (USA).

BE A FIGHTER PILOT FOR A DAY

This is NOT a Simulator!!
 You Actually Fly!!!
 No Flight Experience Required!!



Program Consists of:

- * Flight Gear
- * Briefing
- * Formation Flying
- * 6 Aerial Dog Fights
- * Videotape of Flight

Ask us about our
 Personalized
 Video Tape/Gift
 Certificate

\$695

Now taking reservations in:
 Houston, San Antonio, Dallas, Chicago,
 New York, Portland, Seattle, Boston,
 Washington DC, Philadelphia, Phoenix
 Kansas City, St. Louis, San Jose,
 and Fullerton

AIRCOMBAT U.S.A., INC.
 National Headquarters, Fullerton, Ca.
 (800) 522-7590

TANK COLUMN...



NTC FT IRWIN PHOTOS by Greg Stewart/ARMS Communications



ARMORED FIST IS
ON THE WAY

BY JIM BENDER

NovaLogic Inc. will be releasing its current day tank warfare simulation, **ARMORED FIST**, by early November.

The program was previewed in the July / August issue of **PC COMBAT SIMS**. Many improvements and changes have been made in the final version, which was undergoing playtesting at press time.

Armored Fist features first person combat in M1-A2 Abrams main battle tanks, M3 Bradley infantry fighting vehicles, Russian T-80 main battle tanks and Russian BMP personnel carriers. Artillery and air support are included in the scenarios which utilize the Voxel Space graphics system seen in *Comanche Maximum Overkill*. **Armored Fist** tankers train at the Army's Ft. Irwin National Training Center or at nearby Twenty Nine Palms just like actual tank crews. Once you are through the training syllabus, you'll be shipped out to active duty in exotic locations like Iraq, India and far Eastern Europe.

Armored Fist vehicles are a breeze to control, with their integrated driver/gunner positions. This makes the tasks of driving, navigating, loading, firing and commanding much more manageable than in previous tank warfare simulations. Keyboard controls, rudder and joystick add to a realistic tank crew environment.

The first person graphics are the hook in **Armored Fist**. The 3-D terrain allows you to take your tank columns through the valleys or over the hills and rougher terrain you've identified on your route map. You can set waypoints and proceed to your target area while keeping an eye



Panzer General screens.



ARMORED FIST™

**Scope out the terrain.
Slew your turret.
Lock on target.
And brace yourself for a fire storm!**

You're in the heart of an advanced fighting machine. Peering through the thick smoke billowing off your last victim, you feel you're being watched. Switching to thermal shows something hot behind the trees ahead. Advanced optics zoom in and reveal a Soviet T-80 tank turning its turret toward you. Now is not the time to hesitate... Lock and load. FIRE!

Forge ahead on the digital battlefield of the future in this modern tank simulation from NovaLogic™ (the creators of Comanche™, WolfPack™ and Ultrabots™).

Strap on your helmet for the ride of your life!

- Encounter startlingly realistic pre-built missions or construct your own. Dig trenches, lay mines, even plant trees.
- Choose American M1A2 Abrams main battle tanks, M3 Bradley IFV's equipped with thermal sights, Russian T-80 tanks, or BMP APC's equipped with image intensifiers.
- Engage your enemy in accurate battle environments where you encounter translucent smoke, explosions and grenades.
- Command multiple tanks over 3-D, Voxel Space™ (patent pending), terrain and call in remote artillery or tactical air support to ensure victory.

Suggested Retail Price - \$69.95
Available for PC 3.5" and PC CD-ROM



Actual screen images.



Armored Fist, Comanche, WolfPack, Ultrabots, Voxel Space, NovaLogic, and the NovaLogic Logo are trademarks of NovaLogic, Inc.

**NOVA
LOGIC™**

out for enemy patrols. You are vulnerable to anti-tank missiles, both air and ground launched, and your Bradley IFV is equipped with anti-air SAMs useful against the opposition's Hind helicopters.

Armored Fist turned out to be a very large project for NovaLogic, and as we went to press they were just finishing the digital audio and mission aspects of the program. **PC COMBAT SIMS** will feature a comprehensive review in an upcoming issue.

PANZER GENERAL: WORLD WAR TWO ARMOR SIMULATION

Strategic Simulations, Inc. (SSI) plans to have its latest World War Two strategy game in stores by November. **PANZER GENERAL** puts you in command of the tank armies in Russia, North Africa and Europe and, in a "what if," the United States! You can lead the Allies or Axis armies to victory in nearly forty scenarios that include all the important World War Two battles plus the hypothetical German invasions of England and the United States.

This is another incredible addition to the SSI catalog and is guaranteed to have you glued to your computer for days! SSI releases like *Tanks!* and **Panzer General** show that the company is really picking up speed in its development of new ways to present wargames. Both of these titles totally eclipse the likes of the Atomic Games *V For Victory* series. They both move infinitely faster and are more simplified given the amount of play value they deliver.

PC COMBAT SIMS will cover the complete version of **Panzer General** next issue, but the Beta version we tested was full of action! This wargame features a variety of armor, infantry, recon, anti-aircraft, towed and self propelled artillery, fighter and bomber aircraft, subs, patrol boats, destroyers, cruisers, carriers and troop transports! Whoa!

The most unusual feature is the combat mode, in which the two opposing elements duke it out in two inset circles at the top of the screen. Your units fire at the enemy, resulting in animated explosions in his circle. They then return fire, inflicting visible damage on your units. This works for all the combat elements...ships will shell other ships, troops, tanks, or aircraft, and so on. Subs will fire torpedoes and the targeted ships will drop depth charges! This results in a lot of on screen action for what is basically a hex game. Aircraft will engage in dogfights or bombing runs, troops and

vehicles will load and unload from trucks and ships, and so on. Combat results are displayed as remaining unit strength under the unit symbol.

We couldn't resist the "Washington" scenario in which a massive German force hits the beaches of Maryland and launches air raids from Delaware! Transports unloaded troops, tanks and artillery, while paratroopers dropped behind the enemy lines, backed up by ME-262 air support. We saved the game to finish this article, but we had secured the beachhead in anticipation of a heavy U.S. counterattack! We'll let you know the outcome in our full report next issue! (By Jim Bender)

REGIMENTAL ATTACK! SIMULATED DESERT WARFARE AT FT. IRWIN

Regimental Attack is not the name of the latest tank warfare simulation, although there will probably be one soon. The attack we'll discuss here took place at the ultimate armored warfare simulation center: the U.S. Army's National Training Center (NTC) at Ft. Irwin, California. **PC COMBAT SIMULATIONS** covered the "Digital Rotation" at NTC in the July / August '94 issue. This training period tested the installation of IBM 486 PC

systems on a number of armored vehicles and other equipment used in the training of mechanized units at Ft. Irwin. The testbed systems improved command and control functions via enhanced data communication equipment that linked radios, fire control and radar systems to individual vehicles.

A normal training period includes about four weeks of temporary duty at NTC. American units arrive from their home bases worldwide and spend the first week preparing, the second and third weeks practicing the art of desert warfare, and the fourth week reviewing their performance and preparing to transition home. Their training period involves intensive simulated warfare against the "opposing forces" (OPFOR) units permanently stationed at NTC. Part of the simulated warfare includes live-fire exercises against targets in the Mojave desert environment of the base. This aspect allows tanks, infantry fighting vehicles (IFVs), armored personnel carriers (APCs), artillery and air support to experience the firing of live ammunition, usually in a coordinated effort to defend a position.

The second phase of the simulation is "maneuver" training in which units engage the OPFOR over wide ranges of the desert. Ft. Irwin occupies 635,000



PC Combat Sims reporter Jason Bender mans the M-60 on BRDM #255. Photo by Jim Bender

JOY TO ~~THE~~ YOUR WORLD

HALF PRICE GIFT SUBSCRIPTIONS!

'Tis the season to bring joy to friends and loved ones. Why not put a little joy into your own world at the same time? With a half-priced holiday subscription offer, you can bring joy to the world for a full year!

Now you can afford to give a subscription to one of the best magazines in the field and get one for yourself too! Buy one subscription to *PC Combat Simulations* at the super savings rate of just \$13.95 and get a second for just \$6.95. You save over 40% off the newsstand cost on your own subscription AND you save over 70% on your gift! What could be better than that?

PC Combat Simulations covers the world of military aviation and flight sims and helps you choose the programs that will put you in the cockpit of an F-14 Tomcat, F-15 Eagle, F-16 Falcon, P-51 Mustang or any of your favorite aircraft! Are you a strategy wargamer? *PC Combat Sims* brings you all of the latest information on the very best wargames incorporating all the latest computer game technology! World War Two, the Gulf War and possible future conflicts...land, sea and air!

SO, DON'T DELAY! SAY "MERRY CHRISTMAS" WITH A GIFT SUBSCRIPTION TO *PC COMBAT SIMULATIONS* FOR JUST \$6.95.



☐ ENTER or ☐ RENEW my subscription for the next 6 issues of *PC Combat Simulations* at the rate of just \$13.95. Because I have purchased one subscription at the regular rate, I am eligible to purchase a gift for the next 6 issues of *PC Combat Simulations* for just \$6.95.
(Total due is \$20.90.)

TO: _____ FROM: _____

ADDRESS _____ ADDRESS _____

CITY _____ STATE _____ ZIP _____ CITY _____ STATE _____ ZIP _____

☐ Please enter my subscription only for \$13.95 ☐ Please enter the gift subscription only for \$13.95

☐ Payment Enclosed

☐ New Subscriber

☐ MasterCard / Visa

☐ Bill Me (U.S. Only)

☐ Current Subscriber

EXP. DATE _____

Account No. _____

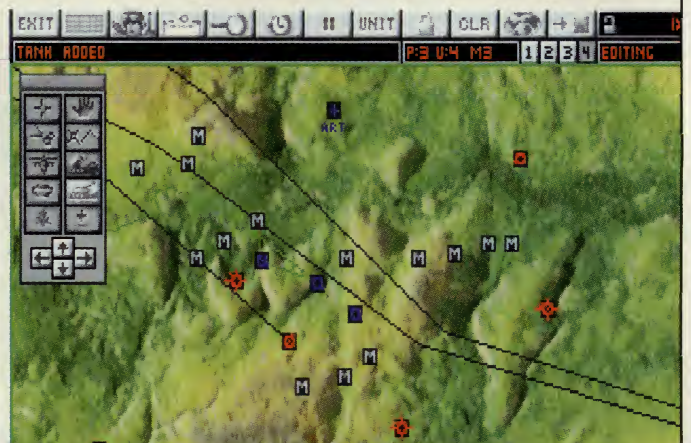
SEND TO:

**PERSONAL COMPUTER
COMBAT
SIMULATIONS!**

SUBSCRIPTION DEPARTMENT
CHALLENGE PUBLICATIONS, INC.
7950 Deering Ave.
Canoga Park, CA 91304

Allow up to twelve weeks for delivery of your first issue. For subscriptions mailed outside the U.S., add \$6.00 for each 6 issues ordered for additional postage. Payment must be made in U.S. funds only.

CEY66 Offer expires January 31, 1995



NovaLogic's ARMORED FIST



acres of California's Mojave Desert just south of Death Valley, halfway between Los Angeles and Las Vegas. During their two weeks of field exercises, units will see a large portion of the area as they attack and defend positions.

NTC uses the Multiple Integrated Laser Engagement System (MILES) to monitor the action and to provide a means to evaluate the performance of the "warriors." This is "laser tag" on a grand scale: all vehicles and participating soldiers wear a laser receptor harness, and all weapons are equipped with laser senders that model the type of weapon in use. The entire area is "wired" with an electronic monitoring system that sends or receives signals from all MILES equipment. Evaluators, or "judges," monitor the action

Army's 177th Brigade models a fictional Russian Motorized Rifle Regiment (MRR), the 32nd Guards MRR of the 60th Guards Motorized Rifle Division. This OPFOR unit employs a mix of real armored vehicles of Russian manufacture, such as BMP tracked armored personnel carriers and BRDM armored scout vehicles, along with "visually modified" (VisMod) American tanks, APCs and Humvees that represent T-80 and T-72 tanks, BMPs, BRDM scouts and other equipment.

The Regimental Attack scenario has three OPFOR motorized rifle companies and their support equipment attacking against a defending group of armored cavalry units. The OPFOR companies employed nearly 200 armored vehicles

the engagement area to clear and hold passes and positions that the mechanized units will pass through on the way to their objectives.

Today's mission objectives are to penetrate through the cav defenses to their command and support facilities in the rear.

Jason is assigned to the Executive Officer's (First Lt. Brian Linvill) BRDM scout vehicle #255, driven by PFC Joseph Oliveira, Jr. (Oscar), a vismod Humvee sporting an M-60 machine gun mount on the roof (the M-60's MILES gear simulates a heavier 14.5mm gun) and equipped with a Dragon anti-tank missile launcher. Jim joins First Sergeant Wendall Ross and his driver, Corporal Dan Bennett in #257, a similarly-equipped vehicle. The low profile, high



BRDM Scout Vehicle, OPFOR, NTC FT. IRWIN

as it occurs and data is collected at a central facility known as the "Death Star" building. Data is replayed after the battles and results are reviewed with participating troops. All weapons fire blank charges to simulate real munitions. When a round is fired, the MILES sender fires a laser beam at the target and the sensor determines the extent of damage. A fatal hit triggers a beeper or light beacon that indicates the unit is out of the battle.

PC COMBAT SIMULATIONS

staffers Jim and Jason Bender were invited to ride with the OPFOR units participating in a "Regimental Attack" on Sunday, September 18, 1994. The U.S.

plus about a dozen helicopters against a somewhat smaller defending cavalry force. Here's the play-by-play as the Benders saw it:

11am The usual dawn attack had been postponed to early afternoon to allow defending cav units to better prepare for the onslaught of a numerically superior, highly-motivated OPFOR. We arrive at the staging area in time for the OPFOR intelligence briefing when the final attack tactics are reviewed. The staging area consists of four dispersed groups of about 50 vehicles each. Groups of assault helicopters begin to ferry infantry toward

speed and armament make the BRDM scout a formidable fighting machine capable of taking out any opposing units, with a little luck.

Our scout vehicles are elements of two scout platoons, each composed of the BRDM, a vismod Sheridan tank modeling a BMP, and a real Soviet BMP assault track. Healthy firepower and high speed for a scout unit! Recon BMP #251 leads Jim's platoon, and is manned by Spec. E5 Timothy White, tank commander, Spec. E4 Thomas North, gunner and Spec. E4 Jerry Huffman, driver. The BMP sports a 37mm cannon and heavy machine guns and is capable

SSI'S WARGAME CONSTRUCTION SET II:

TANKS!

BY SCOTT HARPER

As they always are at deadline time, the fax machine and the answering machine are maxed out with messages from Maria wondering when my story will be done! If it wasn't for her prompting, I'd never complete any articles (so Tanks! for everything, Maria!). I promised a review of S.S.I.'s **WARGAME CONSTRUCTION SET II: TANKS!** as a follow-on to my preview that appeared in the July/August issue of **PC COMBAT SIMS**. The preview article was written in St. Malo, France, where my associate Phillip Renault and I evaluated a pre-release Beta version of the program. The



Photo by Jim Bender

I spent the summer in Europe covering the 50th anniversary of D-Day and it's a relief to be back in this beach house near the **PC COMBAT SIMS** offices in Summerland. Summerland is just a couple of miles south of Santa Barbara and is an ideal location for our editorial headquarters. The area features a blend of politics, art and technology mixed with a laid-back surfer mentality. President Clinton occasionally occupies a beach-side estate on this road and ex-President Reagan frequents the antique shops and taverns of Summerland. All three of us can be found in the Presidents booth at the Nugget, everyone's favorite watering hole (although not at the same time!).

The Summerland beach looks out on the Channel Islands and is a flight sim buff's paradise. I am frequently distracted by low-flying Hueys, Cobras, CH-53s, Seahawks and other helos as they transit between bases. A variety of warbirds, biplanes, homebuilts and other aircraft

are often seen cruising up the coast at 500 feet minimum altitude or less.

I've set up a very high-power spotter scope on the deck to observe air-ops out of the Navy's Pt. Mugu Pacific Missile Test Center. Our close friend and artist Steve Tack (**PC COMBAT SIMS** July/August '94 cover) flies regularly out of Mugu on photo missions aboard P-3 Orions and F-4 Phantoms and the aircraft are sometimes visible through the fog. Pt. Mugu serves as the Navy's weapons testing center and is home to testbed F-14D, F/A-18, P-3s and other aircraft. Pt. Mugu is the only place I know of where F-4 Phantoms are flown by remote control! I'll be covering the facility and its "simulations" in a future article.

actual production version of **TANKS!** is even better than the version we previewed. Let's take a look...

TANKS! is unique in that you can mix and match armor units from different eras, such as placing your modern American forces into combat with German units in WWII or North Korean units in 1950. It's a hex-based wargame with a twist...click on and drag your units to move them, right click to target and fire...all while enjoying stereo sound effects that will give your speakers and Thunderseat a real workout!

TANKS! most interesting addition is the inclusion of a "Tomorrow" scenario that pits your modern American forces against those of the C.I.S. (Russians) in a variety of scenarios. Players can select battle in temperate, arid or winter conditions, with varying densities of roads, towns and terrain.

The scenario editor is easy to master and allows you to create custom



battlefields to test your tactical skills against another player or a very competent computer opponent. Use the editor to place roads, villages, farm fields, forests, swamps, creeks or larger bodies of water on your selected terrain. Then place barbed wire, mines and fortified positions for both you and your opponent. Unit editing is next as you select equipment, size and strength of units for both sides. Tiles can contain up to 15 tanks or other vehicles or squads each and you can build a large number of tiles for each side. Unit deployment is next where you position both sides in preparation for battle.

In a recent scenario I prepared a heavily-defended American position through several towns, with extensive minefields on both flanks. As each group of tiles is placed they are assigned an objective. The defending army was assigned to hold in place, while the enemy was given objectives through, then behind the defenders lines. This forced an equality strong C.I.S. opponent to attempt to drive through a chokepoint toward assigned objectives.

Each turn begins with airstrikes, so anti-air unit placement is important. American AA units were simply outperformed by the C.I.S. Most American strikes were shot down by intense SAM and ZSU-23 fire. C.I.S. heavy jets went straight to my attack helicopters and wiped them out!

I held my forces in place for the first couple of turns as the enemy approached. Fog of war applies in that you can't see the enemy until they are nearby unless you've got scout units out front or helos in the area. As the

enemy tank columns approached the battle began in earnest. In a unit-heavy engagement the computer will fire at your forces and your forces will automatically engage to defend. This creates some exciting, nearly hands-off action, as both sides furiously trade shots. Turn the sound way up and wake up the neighbors!

The enemy helicopters successfully dropped troops near the attacking armor columns, while another helo squadron made an end run north behind my lines and dropped infantry and mortar squads which engaged my reserve forces. The American main line of defense held although the computer enemy had an uncanny way of detecting and shooting my softer units of Bradleys and ITV-APCs. Artillery from both sides blasted large numbers of units although the dug in defenders survived reasonably well.

As turns progressed the attacking enemy was sufficiently weakened, allowing a powerful counterattack by the defending forces. American forces pushed back the enemy armor and knocked out SAM batteries and ZSU-23s, opening things up for improved American air strikes. From that point it was just a couple of turns to mop up the remaining C.I.S. armor and to drive deep to kill the remaining enemy artillery units, ending the battle.

The victory screen reported the American forces as the winners with over 8500 points scored toward the campaign goals. Total time for this particular battle was over four hours due to the large number of units on both sides.

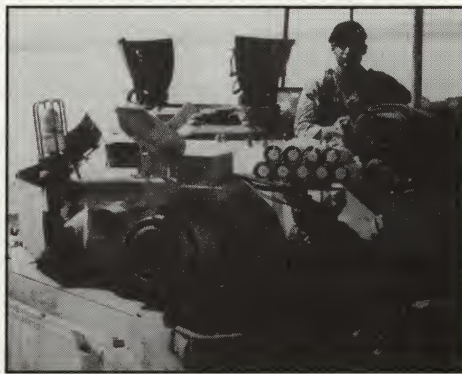
The scenario editor and the very large variety of assignable equipment from different time periods present an almost unlimited number of combat possibilities.

TANKS! will provide many hours wargaming pleasure to players of any skill level. Although it lacks the 3-D look of the futuristic squad-level action in X-COM, it will prove equally addictive to any serious tank warfare fan. Based more on actual battles than on fiction, **TANKS!** allows you to recreate historical scenarios in a very interesting way or to use your imagination to create incredible "what if" scenarios on a par with Harold Coyle (Team Yankee) or Larry Bond (Red Phoenix). **TANKS!** is truly one of the most innovative simulations of 1994!

TANKS! system requirements: IBM-PC, 3.5 disk, 2Mb RAM, mouse, 256 color VGA, Sound Blaster or compatibles. ThunderSeat, helmet, goggles and body armor recommended! □

of hitting up to 60 mph over relatively rough cross-country terrain.

2pm Jim's platoon, 251 and 257 plus the authentic BMP, are to clear the northern route of any enemy scout vehicles and to rejoin the main body of the attack about halfway to the engagement area. #257, commanded by First Sgt. Ross, proceeds several miles to the north side of hill 1075, where we are asked to check out people on its top. Our other elements press on while we divert to the base of the hill, identify the targets and begin to head east. Hill 1075 and its assortment of boulders causes our nearly indestructible Humvee to suffer a broken rear ball joint and damaged tire, putting us "maintenance down" and temporarily out of action. We call for a repair crew and replacement parts and watch as the main body

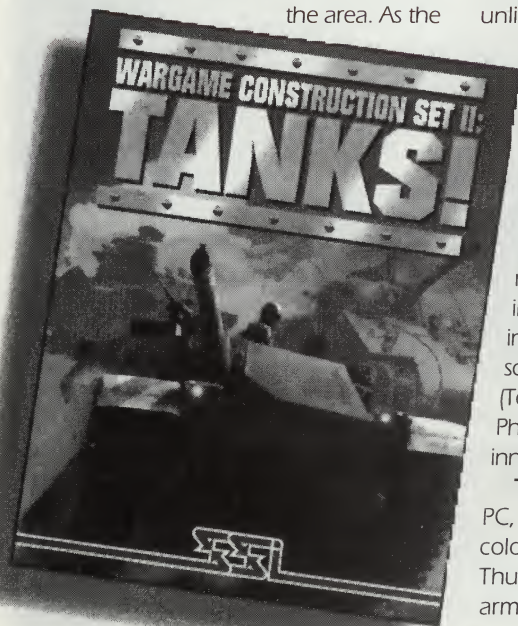


VISMOD M-551 - BMP

continues the attack nearby.

Meanwhile, Jason and his recon platoon charge east down the central corridor, while the lead armor element and follow-on units fill the southern approach. Jason and First Lt. Linvill in #255 are much more successful, establishing an overwatch position at the forward edge of the battle.

In just a few minutes, the lead elements of the OPFOR engage and attack the southern positions of the cav, while the main body of the OPFOR armor units follow them in. According to Jason, the cav mechanized units are deployed in an "L" shaped formation to the north and east. As the cav units begin to move to engage the OPFOR, huge plumes of dust alert the OPFOR tankers, who lay on fire and take them out quickly. The cav units apparently did not move quickly enough to join their southern positions, which might have in total been able to fend off the attack. OPFOR gunship helos provide close air support, and cav Cobra gunships are considerably less effective in the defense



roll. Russian T-80 main battle tanks have a longer range main gun than the U.S. Abrams tank, and when skillfully handled, can outshoot it.

In less than 70 minutes the battle is over, with only the lead OPFOR elements engaging and destroying all of the defending cav force. Only a few OPFOR units are "killed," mostly by pre-determined artillery barrages. Today's Regimental Attack is a quick and easy victory for the seasoned OPFOR warriors!

3:15pm Meanwhile, back at hill 1075, BRDM 257 completes its field "road service," thanks the maintenance chief and radios that it is "up," only to find out that the battle has already ended! Bummer! Jim and First Sgt. "7 India" head for the rendezvous point just east of hill 781 where the victorious OPFOR units have rallied. Several more hours pass as units are rounded up, other breakdowns are reported and noted and the units pull out and head for their next staging area, to prepare for tomorrow's engagement.

7pm That evening, back at the main base, the discussion revolves around the mistakes made by the cav units. It seems that cav units usually serve as recon elements for larger forces and normally find and hold an enemy while a larger force moves up to engage. Today's scenario was a little unusual for them, but everyone agrees that a more aggressive posture, at least in attempting to join all their elements to hold their defense, would have helped. Who knows? They may encounter this situation one day in the real world, and they'd better know how to handle it!



VISMOD M551 - T 72

The OPFOR at NTC represents the most highly trained and effective units in the world that practice Soviet military doctrine. No opponent that an American force will encounter should be as tough as the NTC OPFOR. This training puts units at a disadvantage, so they will learn to excel in the future.

THE SIMULATION

This OPFOR live action simulation can be recreated on your personal computer using two of the programs mentioned earlier in this column. SSI's **TANKS!** will enable you to model the terrain, unit deployment, equipment and circumstances almost exactly, to recreate this battle or nearly any other. All of the units and events mentioned above can be recreated with elements included in **TANKS!** (As soon as I finish this story I'm booting it up!) Be sure to enlist your significant other to throw handfuls of sand at you while you play!

You demand realism, right?

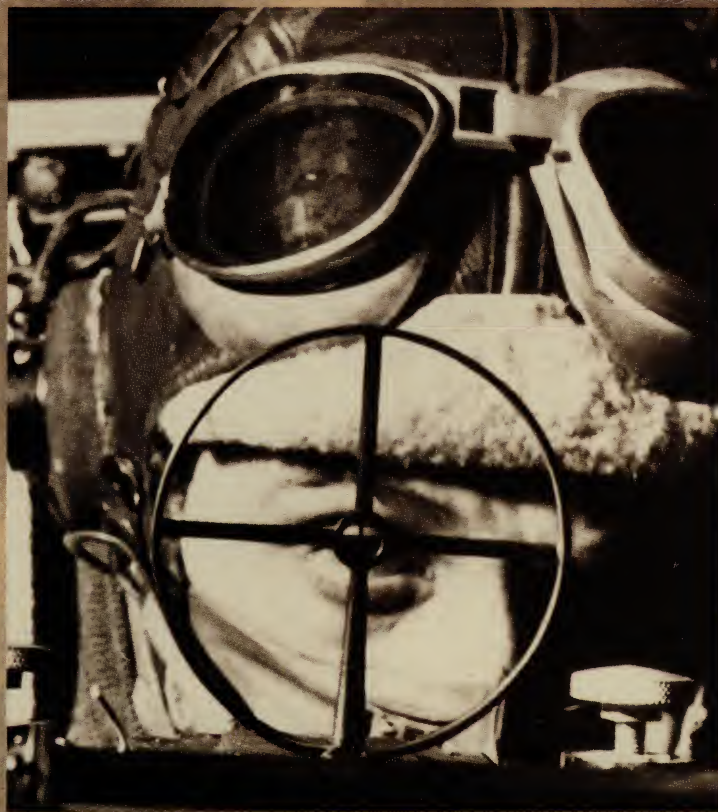
You can recreate the recon or scout platoon aspects of the battle with NovaLogic's **Armored Fist**. You control platoon/size elements in **Armored Fist** and can choose either U.S. or Russian armor. The simulation includes both Ft. Irwin and Twentynine Palms scenarios, but watch out, those computer-controlled OPFOR units are just as tough as the real guys!

TANKS! is a large-scale, easy-to-use strategy game that's very exciting. **Armored Fist** is a more intimate, platoon-level sim that puts you in the tank commander's position for one-on-one tank warfare. Any respectable "sim-tanker" is gonna need 'em both!

(Thanks to the U.S. Army Public Affairs office and all of the warriors at NTC for their assistance! And, yes, the First Sergeants are the ones who get things done!) □

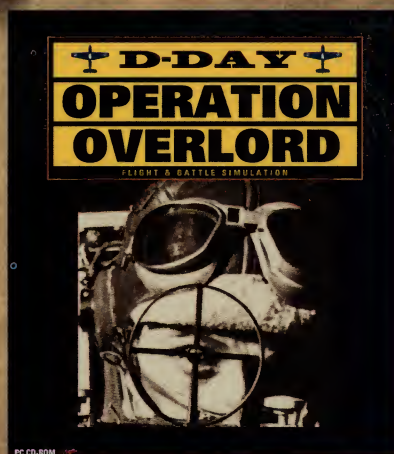


GREAT MEN MAKE HISTORY BUT ONLY YOU CAN CHANGE IT.



Climb behind the controls of some of the greatest flying machines conceived for aerial combat and experience astonishingly real flight and battle simulations of the greatest invasion of the 20th century. History is yours to command.

- THE MOST HISTORICALLY ACCURATE RENDERING OF D-DAY AVAILABLE. ALL AIRFIELDS, COASTAL BATTERIES, MARSHALING YARDS, AND ROCKET LAUNCHING SITES ARE BASED ON ACTUAL AERIAL PHOTOGRAPHS TAKEN FROM RE-CON MISSIONS FLOWN DURING THIS PERIOD. OVER 130 PHOTOGRAPHS HAVE BEEN BORROWED FROM THE SMITHSONIAN INSTITUTION.



- CHOOSE FROM THREE OF THE MOST POWERFUL SINGLE SEAT FIGHTERS USED IN WWII: THE SPITFIRE, THE MUSTANG OR THE TYPHOON. ALL COCKPITS ARE HISTORICALLY ACCURATE DOWN TO THE LAST FUEL GAUGE.
- DOGFIGHT AGAINST THE ENEMY'S BEST FLYING FORTRESSES SUCH AS THE FOCKE-WULF 190, THE JUNKER 88 AND THE DREADED MESSERSCHMITT 109.
- NO TWO MISSIONS ARE IDENTICAL.



D-DAY: OPERATION OVERLORD™ and ©1994 Virgin Interactive Entertainment, Inc. and Rowan Software, Ltd. All rights reserved. Virgin is a registered trademark of Virgin Enterprises, Ltd. Photos: National Air and Space Museum, Smithsonian Institution.



AVAILABLE ON PC-CD ROM





LAST COMBAT OF THE RED BARON by Frank Wootton.

BY JIM BENDER

DAWN PATROL

RELIVE AERIAL DOGFIGHTS
WITH THE "FLYING CIRCUS" !



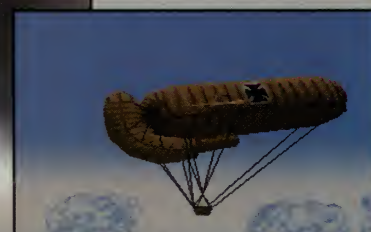
During the four years of World War One, 1915 to 1918, first one side and then the other gained air superiority. Many pilots were real characters and they developed a wide range of tactics — some very unorthodox! Many different aircraft were developed during the Great War and the many pilots and numerous Aces provide a wealth of history to explore in **DAWN PATROL**. The stunning new flight simulation and multimedia interactive history book from Rowan Productions (England) and Empire Software (U.S.) enables you to experience the aces and aircraft that laid the foundation for aerial combat.

Rod Hyde, designer, programmer and managing director of Rowan Productions talks about the research that went into **Dawn Patrol**: "Generally when I start to think about a game design, I will pick out two or three themes that I have discovered in my research. However, for **Dawn Patrol**, there were so many interesting but

**SKIM THE CLOUDS, BUST A FEW BALLOONS AND
DOGFIGHT YOUR WAY THROUGH THE GREAT WAR.**

WINGS OF GLORY™

Climb into the cockpit of a Sopwith Camel and test your skills as a daring aviator in the War to End All Wars. Fly for the British and Americans, discovering the strengths and weaknesses of your different planes as well as those of the enemy. Earn the respect of both sides as you secure your place in the company of aces!



Actual screens may vary.

- 4-channel digital sound gives you the roar of dog-fighting the way WWI pilots heard it.
- Instant mission generator lets you fly against any combination of enemies you choose.
- Refined game engine generates realistic clouds, trees and increased plane detail.

**FOR A GREAT GAME EXPERIENCE,
WE RECOMMEND AN INTEL486™
DX2 OR PENTIUM™
PROCESSOR-BASED SYSTEM.
FOR LITERATURE ON INTEL
PROCESSORS, CALL
1-800-756-8766**

Copyright © 1994 ORIGIN Systems, Inc. Wings of Glory is a trademark of ORIGIN Systems, Inc. Origin and We create worlds are registered trademarks of ORIGIN Systems, Inc. Electronic Arts is a registered trademark of Electronic Arts. Intel, Intel486 and Pentium are trademarks of Intel Corporation.

Available at a software retailer near you, or call 1-800-245-4525 for MC/Visa/Discover orders.

ORIGIN®
We create worlds.®
An Electronic Arts® Company
P.O. BOX 161750 AUSTIN, TX 78716

diverse stories that I decided to adopt a different approach. This 'interactive history book' contains chapters on the history, the Aces, the aircraft and at the end there are blank pages which get filled in to describe the player's progress. On most pages there is a story illustrated by presenting a mission which the player can modify and fly."

Many of the "stories" relate incidents that actually occurred. For instance, Albert Ball's trial mission where he shoots down an opponent and is then transferred from recon duty to a fighter squadron. Or a story and mission that illustrates Mike Mannock's motto: "Always above, seldom at the same level, never underneath." Or perhaps you'd like to recreate Frank Luke's balloon-busting missions!

Rod says the production team strove to be as historically accurate as possible in the creation of **Dawn Patrol**. "We introduce the nuances and subtleties of real combat. This makes for good game play with no two missions being absolutely identical. The fact that it actually happened gives it a real human interest. The First World War library of books includes many about the pilots, full of stories that we wanted to tell in our 'history book'. We have stories of

actually being able to move his head to look around. A real pilot does not blindly stare out the front screen hoping that the target will appear in front of him!

"The two major advantages of the inside padlock are that the target is never out of sight so it is possible to do complex maneuvers without losing



control and that, after an initial familiarisation period, the view is rarely disorienting. This view is also valuable when used against ground targets."

Dawn Patrol also features a number of other padlock views including: nearest enemy aircraft (three variations), nearest friendly (good for escort missions), nearest ground target and today's target.

And it is also possible to view the target in any way: chase, satellite, track, outside, inside lock and outside lock.

A mixed mode includes SVGA for the book section and standard game resolution for the flying section.

Many missions support multiple aircraft in exciting dogfight action. Empire Software's Chris Mate recently demo'd **Dawn Patrol** at a computer show in London. "The outside views show a screen filled with planes. We always drew a crowd to observe the action when fighters attacked larger bombers and flamed them!" said Chris.

THE HISTORY BOOK FORMAT

Dawn Patrol is divided into sections that emulate the periods of the war, the Aces and the Aircraft. The first 90-odd pages contain true stories, and in most cases, missions that actually happened. It's up to you to faithfully recreate the flying in the scenario...your skills and luck will decide the outcome.

Section one: The First Air War includes chapter titles "The Fokker Scourge," "The Allies Respond," "Bloody April," "The Tide Turns," "Battle Flights," "The Flying Circus" and "Final Victory."

These are complete missions, with action and aircraft specific to the time period. For example, in "The Allies Respond," two DH2's escort a bombing mission consisting of two Quirks. The Fokker Monoplane engages.

Section two: The First Aces assigns the player missions that emulate an actual experience of the specific ace. For example, Albert Ball in his Nieuport engages two Albatros two-seaters escorted by two Fokker Monoplanes. Fifteen Aces are portrayed including Billy Bishop, Charles Nungesser, Eddie Rickenbacker, Max Immelmann and Baron Von Richthofen.

Section three: The Aircraft of the Era allows the sim pilot to select from 14 featured aircraft, each with a mission relevant to its capabilities, whether it be patrol, escort or attack.

The aircraft selection includes the Nieuport, Spad 7, Sopwith Camel, Albatros D, and three varieties of Fokkers.

YOUR DAWN PATROL CAREER: PILOT BIOGRAPHIES

The fourth section of the book includes 64 pages for the player to fill in.

There are eight fictitious pilots and each pilot has eight pages allocated to him for his story to be told. Two pilots are American, two British, two French and two are German. Each nation is



BONNE CHANCE by James Dietz.

chivalry, cunning, bravery, luck and skill. The missions can be played 'as is' or can be tweaked. It is often possible to fly on either side: Allied (American, British, French) or Central Powers (German)."

NEW "PADLOCK" VIEWS

In the past, close-in air to air combat on computer simulations was tricky. According to Hyde, "We have developed new padlock views that give the advantage back to the player. The 'inside lock' view is specifically designed for close in action, and simulates the pilots'

Press a key in each mode to select the most interesting target for your attention. There are reverse angles for most views and even more options are available. As Rod states: "The inside lock is essential for exciting air and ground combat!"

The simulation includes an SVGA 3-D mode for use on 486 machines with 60+ MHz with local bus. **Dawn Patrol** looked and ran great on **PC COMBAT SIMS** Falcon Mach V 486. Smooth graphics, very detailed aircraft, terrific terrain features, flak, tracers and explosions! There is a standard graphics mode for less powerful machines.

represented by a Cavalier and a Tactician. The player chooses a pilot and then is presented with a set of missions for his first page. Once selected, the missions can be tweaked and flown.

The computer then generates a page which summarizes the action. If the player is satisfied with the result he can save the page and go onto the next one until all eight pages are completed. The challenge is to fly the mission in such a way that the computer is able to generate an interesting summary.

MISSIONS

There are many types of air missions in **Dawn Patrol**. There are straightforward dogfights, sometimes where the player is at an advantage and sometimes where he is definitely in a poor position. For instance, the player can start in a position where he is outnumbered and should maneuver to see if he can survive.

There are escort missions where the objective can be a bombing raid or recon of an area or to provide artillery spotting. There are intercept missions where the player attempts to break up the enemy formation and attack the escorted aircraft.

Dawn Patrol also features balloon-busting and ground strafing of convoys. Often these are targets of opportunity and if you find yourself on the deck, it's worth trying to get one!

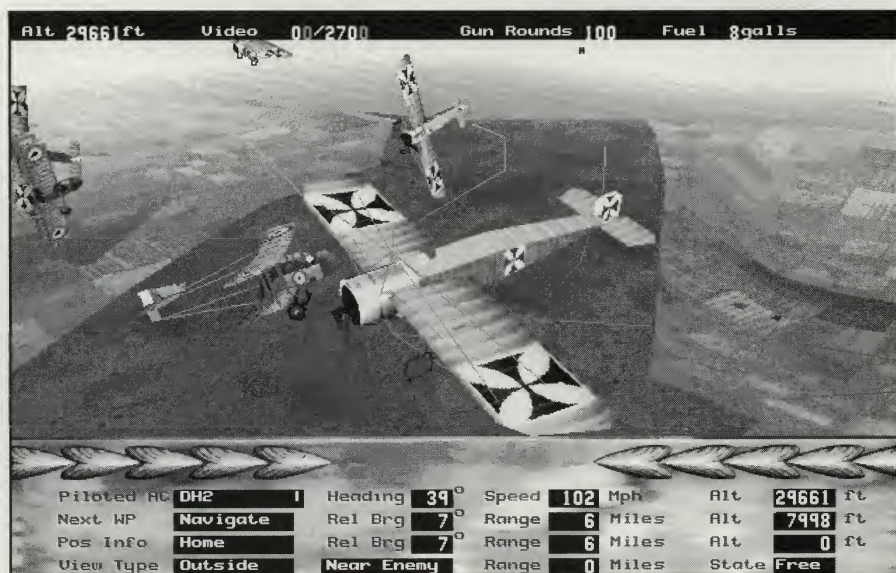
In one mission, the player is required to do an Immelmann turn to succeed. This requires the correct use of full rudder and is fine for players using rudder pedals, but is quite difficult, although achievable, using keyboard commands.

All missions can be tweaked by changing the red highlighted items mentioned in the mission description. You can change the highlighted aircraft types or the number of aircraft that will appear in the scenario.

VIDEO AND MUSIC

During video replay, it's possible to view the world using any of the views mentioned in the view matrix. There are save, load, edit and splice footage features, so it is possible to build up an original record of combat.

The music used in **Dawn Patrol** is



Tchaikovsky's "Capriccio Italien." This was adapted and incorporated into the program by Paul Robotham.

PREFERENCES

The preference menu allows you to select settings for the following: Engines (normal or super), Vulnerability (on-off), Arms (on-off), Targets (soft, medium, hard), Enemy Activity (low, medium, high), and detail level. Keyboard controls, joystick, joy-throttle, Flightstick Pro, Thrustmaster and rudders can be selected. The preference menu is easy to access and change.

TEST FLIGHT

PC COMBAT SIMULATIONS

previewed a completed version of **Dawn Patrol**, which should be reaching stores in early November. We did not receive an actual manual and trust that the use of the view matrix will be clearly explained and charted in the printed version. It is complex and takes some time to get used to, but delivers results in combat that are worth working for! The selection of time periods, Aces and aircraft is excellent, allowing very fast access to many different scenarios. The ability to develop your "personality" via the eight pilot biographies is a unique way to address the career aspect of flight simulation. Missions are duplicated to some extent across the categories... you may find that an Aces mission also appears as the mission for a given aircraft if both plane and pilot were present in the real event. There are enough stock mission possibilities to satisfy even the best sim pilots, plus the pilot

biographies career section.

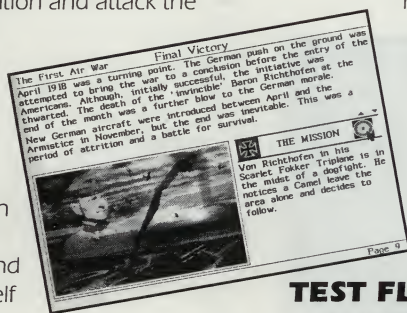
The pilot view shows altitude, video on/off and messages in a black header at the top of the screen. Compass heading, RPM and airspeed are displayed on easily readable gauges on the instrument panel. Aircraft appear to be sensitive to engine/prop torque and exhibit a tendency to roll left so you won't be in the kitchen getting a beer while your plane flies to the target!

Aircraft are attractively rendered and do indeed look terrific in close-in dogfights. Aircraft interiors are simple but well drawn and left, right and rear views are easily accessed. The outside views are stunning and the follow view is great for aerobatics. Flight characteristics are very well modeled and sim pilots will enjoy both combat and hot-dogging. We'll have a followup evaluation in a future issue after we get some hours in our logbook.

Ground targets are detailed and your strafing attacks will yield impressive explosions. The enemy will defend his installations, so plan your attacks accordingly.

Dawn Patrol is a simulation where you can actually land your aircraft! Most flat areas will serve as an emergency landing field and getting these babies down on the ground is a whole lot simpler than it is in most flight sims!

Dawn Patrol offers a unique approach to an era of air combat that has not really been exploited on the PC. Players have access to missions and careers without the sometimes overwhelming difficulty found in other sims. Not all real pilots are Aces but these sim pilots will least have a chance to prove themselves and will be rewarded!



READ ALL ABOUT IT

BY JIM TITTLE

Okay, you're a hot combat simulator pilot, right? You've been pounding the enemy in a daily variety of simulated scenarios from World War One to the Persian Gulf. You've been pretty successful winning all sorts of decorations and accolades from your home countries.

TOP OR BOTTOM GUN?

But there's that nagging knowledge that in many situations you could do better. You never let on to your simulator squadron mates because it might tarnish your superman image.

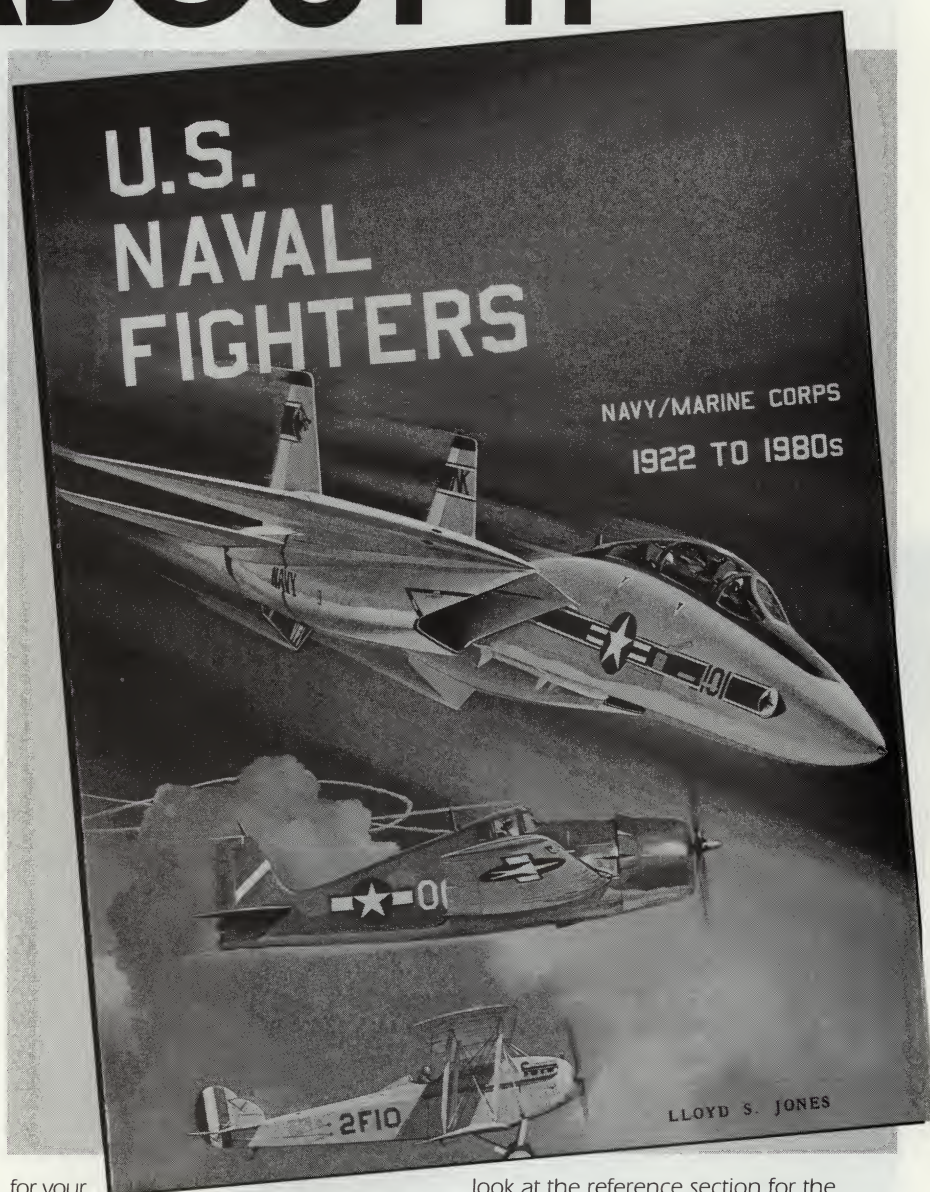
It's not that you haven't practiced. You're at your computer several hours a day. So what's missing?

Have you read up on any of the tactics and maneuvers that **real** pilots used in combat? No?! Well, you're missing out on the true spirit of combat simulations. If all those real combat pilots had not done what they did there would be no inspirational basis for simulators and we'd all be playing **Frogger**, or at best, put-putting around in Cessna sims saying, "Oh my, a crosswind landing." Ho hum.

It helped me to re-read everything I could on the P-38 when I was failing with it in combat. Yeah, I was hot in single-engined fighters, but the big twin-engined planes demand different tactics than tight turning dogfights. P-39s and P-40s are no match for the aerobatic Japanese planes. Fifty years ago young guys in those very planes were not only surviving, but winning aerial duels. How?

README.DOC

I used the resources in my library to not only read about actual pilots' combat tactics, but performance specs as well. Even if you have not been collecting books on combat aviation for decades you can head

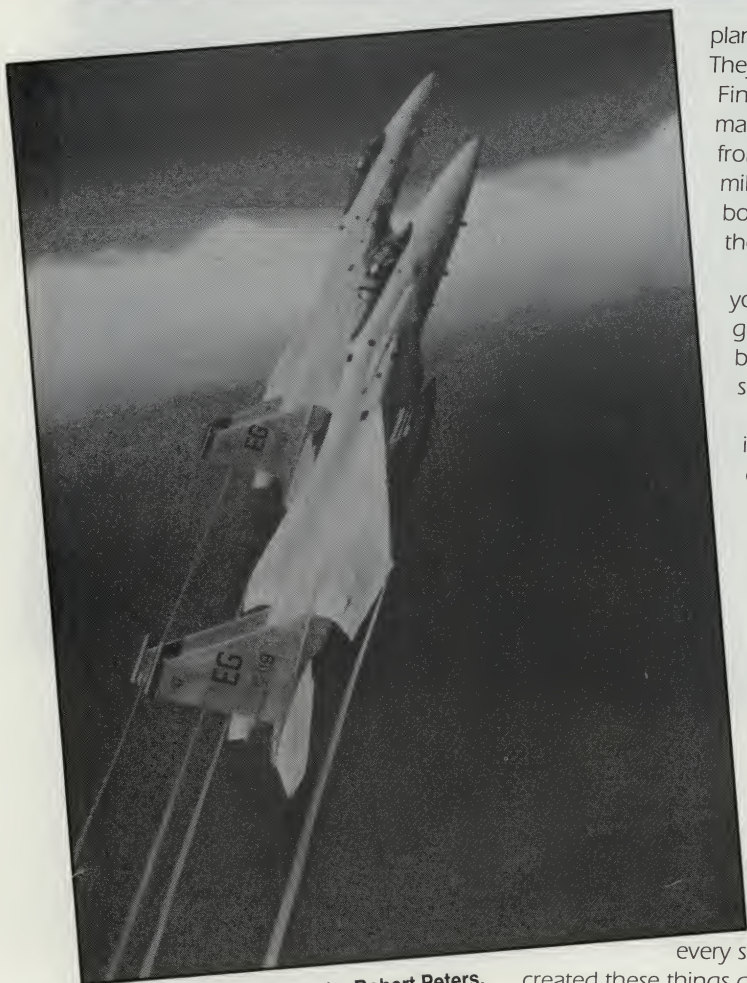
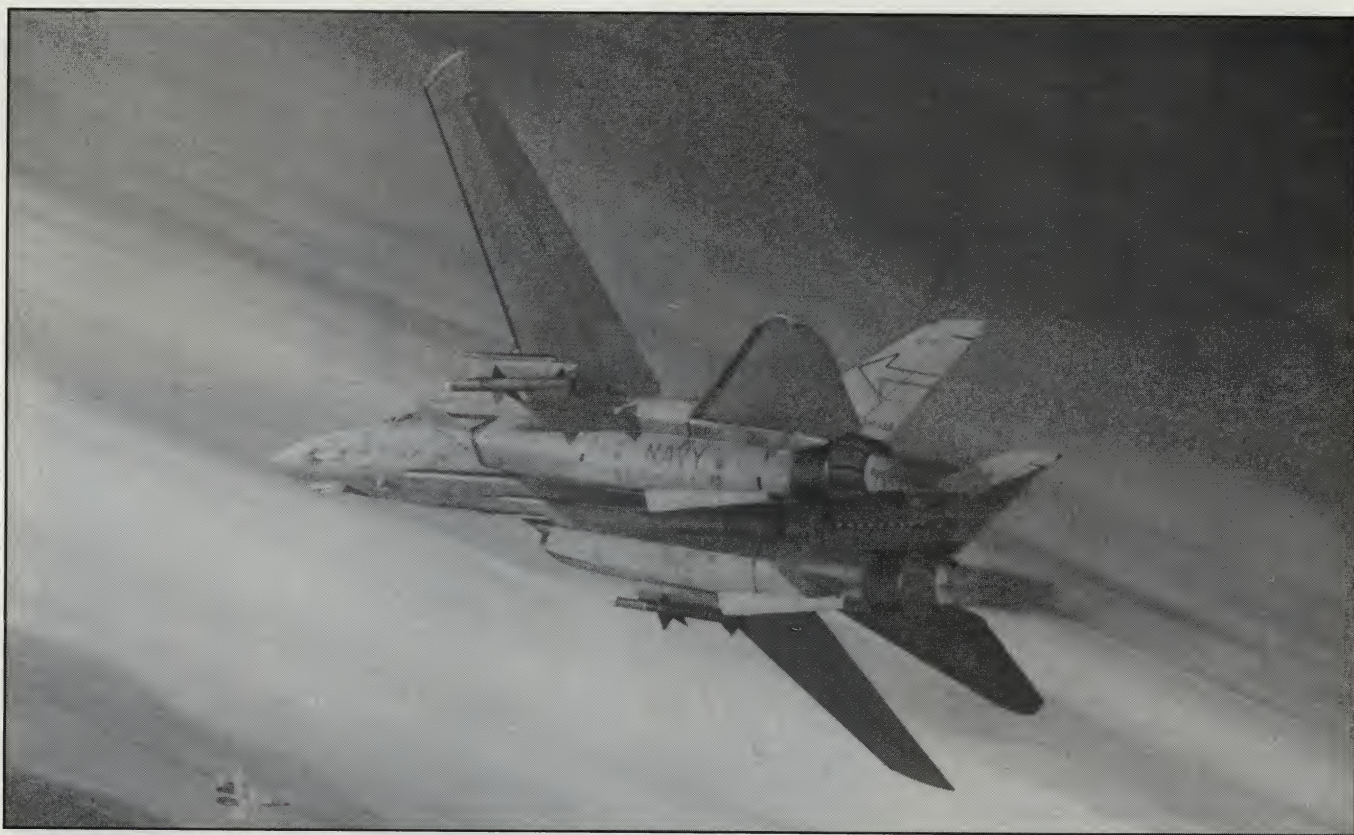


for your local library and find plenty of material.

The 619.XXX section usually is catalogued with titles leaning toward statistics on aircraft, while 940.XXX contains a wealth of first hand historical accounts and tactics. Somewhere in the 3-350.XXX shelves are more on war, aerospace, and aircraft. Check the "oversize" section for Jane's All The Worlds' Aircraft and many others. Finally,

look at the reference section for the same numbers. But check all the sections, since there is really a gray area by those that catalog the titles and categories overlap somewhat within the Dewey decimal listings.

Haunt new and used book stores, too. You might strike gold, especially in out-of-print titles. Remember, even if it was printed in 1960, the facts and specs are still current regarding previous wars'



Paintings by Robert Peters.

planes and combats. They are also cheap! Finally, most aviation magazines carry ads from many mail-order military and aviation book sellers. Check them out.

Just consider your studies as ground school before Top Gun simulator training.

You will gain insight into the way different aircraft were employed in combat and the best formations to fly. Pilots used the planes' strengths and avoided situations where the weaknesses could be exploited by the enemy.

And **do** read the README.* files which accompany

every sim. The guys who created these things give you info not always found in the manual.

THE PAYOFF

My P-38 flights improved, especially in **Secret Weapons**, when I stopped getting suckered into roundy-round fights. I used the Lightning's dive and zoom abilities. I opened fire at longer range to damage the enemy before closing in for the kill. Fifty calibers shoot straighter for a longer distance than any cannon due to their higher velocity and flatter trajectory.

At low altitudes my stat books told me I could outrun 190s and 109s. It worked! And with enough headstart, the P-38 could outclimb them and cruise home at 40,000 feet, above their ceilings. I swear the artificial intelligence learned the trick from me and used it against me when I was in an FW 190, though!

In many sims you can surround yourself with aces, whether computer-created or pilots you have brought to "life" and run up scores with. They will assist you in keeping the bad guys off your butt while you deal with that Me 109 or MiG personally. Hey, you can't be everywhere.

Most sims are pretty true to actual performance specifications, so study up on them. Know what altitudes your planes perform best at and exploit the enemies' weak points.

Richtofen and Rickenbacker's exploits are well chronicled from World War

PANZER GENERAL™

Fast, Fun & Good-looking!

As a strategy game, PANZER GENERAL will stimulate your mind. But your eyes and ears won't believe how great it looks and sounds:

stunning SuperVGA graphics,
authentic World War II
combat photography
and film footage *plus*
CD-quality music and
dynamite sound effects.

You'll love the way
it plays: PANZER
GENERAL is one
blazingly fast
and fun game!

The year
is 1939; you
are a German
General
with a fresh
command
in Poland.

Anything can
happen, and every
game you play will be dif-
ferent. Win and advance to the

next front of your choice. Lead well
and your increasingly battle-hardened
core group of units could be plowing across
Europe, North Africa and the Eastern
Front. You could even end up in England
by 1940 — or in America by 1945!

Besides the campaign game, there are
35 progressive scenarios which you can
play as either the Allied or Axis side.
Choose from 350 unit types, from Tiger tanks to B-17 Flying Fortresses.

**PANZER GENERAL. *Setting a
new standard
in strategy
gaming.***

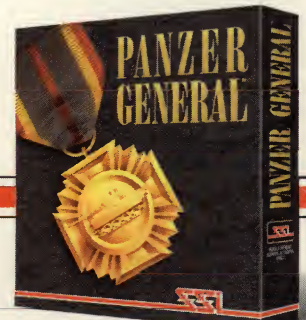
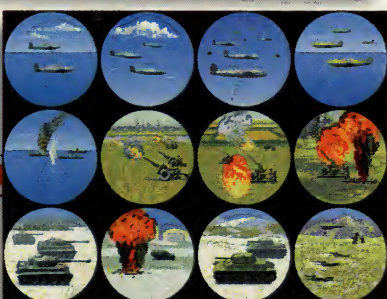


To order, visit your retailer or call SSI Direct Sales at
(408) 737-6800 with VISA or MASTERCARD in U.S. and Canada.

©1994 Strategic Simulations, Inc. All rights reserved.



On CD-ROM and
3.5" disks for IBM & Compatibles.



IBM 256-color SVGA Displays

A Dickens of a Christmas offer

GIFT SUBSCRIPTIONS FOR JUST \$5.95

Don't let the Ghost of Christmas Passed dampen your holiday spirit. Give a gift that's easy to give, and inexpensive, too. Even Scrooge would agree this is an offer that's too good to pass up!



Now you can afford to give a subscription to one of the best magazines in the field and get one for yourself too! Buy one subscription to *Air Combat* at the super savings rate of just \$13.95 and get a second for just \$5.95. You save over 40% off the newsstand cost on your own subscription AND you save over 70% on your gift! What could be better than that?

Air Combat takes you behind the scenes of the world's most turbulent aviation conflicts. *Air Combat* reports on the manpower and the hardware involved in these explosive missions. It provides you with the evidence of the stark realities of many difficult military situations. Your best line of defense is a subscription to *Air Combat*.

**SO, DON'T DELAY!
SAY "MERRY
CHRISTMAS"
WITH A GIFT
SUBSCRIPTION
TO AIR COMBAT
FOR JUST \$5.95.**



☐ ENTER or ☐ RENEW my subscription for the next 6 issues of *Air Combat* at the rate of just \$13.95. Because I have purchased one subscription at the regular rate, I am eligible to purchase a gift for the next 6 issues of *Air Combat* for just \$5.95.
(Total due is \$19.90.)

TO: _____ FROM: _____

ADDRESS _____ ADDRESS _____

CITY _____ STATE _____ ZIP _____ CITY _____ STATE _____ ZIP _____

☐ Please enter my subscription only for \$13.95 ☐ Please enter the gift subscription only for \$13.95

☐ Payment Enclosed

☐ New Subscriber

☐ MasterCard / Visa

☐ Bill Me (U.S. Only)

☐ Current Subscriber

EXP. DATE _____

Account No. _____

SEND TO:

AIR COMBAT

SUBSCRIPTION DEPARTMENT
CHALLENGE PUBLICATIONS, INC.
7950 Deering Ave.
Canoga Park, CA 91304

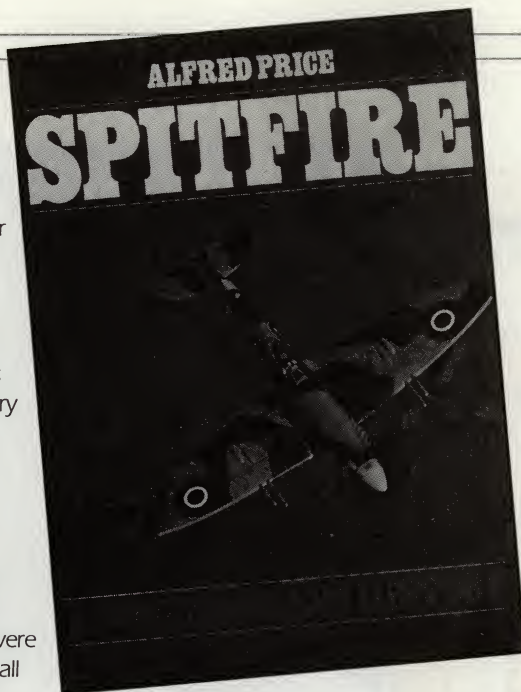
Allow up to twelve weeks for delivery of your first issue. For subscriptions mailed outside the U.S., add \$6.00 for each 6 issues ordered for additional postage. Payment must be made in U.S. funds only.
CEYB6 Offer expires January 31, 1995

One. Saburo Sakai, Dick Bong, Adolf Galland, Don Gentile, and more, are written about from World War Two. Gabby Gabreski's tactics in World War Two and Korea are in print along with other F-86 vs. MiG combats. Read Air Force ace Steve Ritchie's Vietnam story. Navy ace Duke Cunningham tells every second of his maneuvers and triumph over 13-victory ace, Col. Tomb, from North Vietnam. There is even a book out by an F-117 Stealth pilot who flew over Iraq.

REAL, OR MEMOREX?

We all should realize that simulators lean more toward entertainment than 100% real flight models. If sim aircraft were totally true to their actual counterparts, all but a few die-hards would quickly be frustrated in attempts to master their various quirks and we'd be back to **Frogger**. "Oh my, I've been squished by a car again."

There is, however, enough realism programmed in to use similar tactics that real pilots used and be more successful than entering combat with no performance

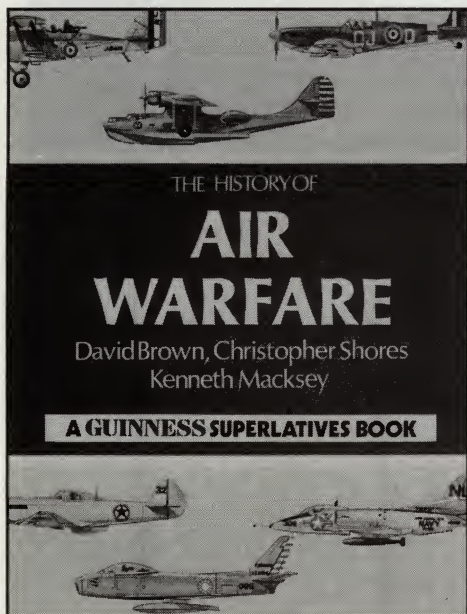


everything mentally that a real combat pilot does. If you're really "into" the sim, that is. Anxiety, frustration, surprise, even fear can be felt. Then there is the relaxation and finally elation of making it home. All these emotions manifest themselves in sim pilots to the point that you will have to consciously tell yourself that you are still in the den and not 25,000 feet over Hanover in 1944!

And personally, I find nothing that decompresses me better after a tough work day, followed by an hour of 10 mph traffic, than a string of 20 aerial victories. Gee, maybe if everyone did that we'd be the kinder, gentler nation that ex-combat pilot/President Bush spoke about! Hmm. Wonder he flies

Aces Of The Pacific?

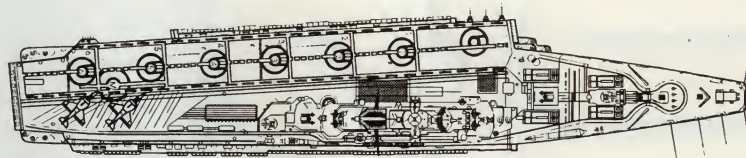
Always check your six!



or tactical knowledge. Remember, the simulator only simulates so much. Keep that in mind when you emulate a tactic, you have read about. It may not work perfectly the first time, but keep trying. If it confuses the artificial intelligence at all, it works!

The most important mind-set to have is to strive to act instead of react. Make the enemy react first and you have the upper hand. It's up to you to keep it and make the kill or you'll be the one parachuting into enemy territory. Turn into them and open fire, making them break first.

Except for the G forces, you experience



WHERE THE SIMS COME FROM ! GET THE PICTURE

Photos for personal use:

35mm color slides	\$ 5.00 ea
(specify subject for list of available shots)	
8"x10" color prints	25.00 ea
(specify subject for list of available shots)	
18"x24" MiG-29 poster / 1995 calendar ...	10.00 ea
18"x24" USMC "911" poster	4.00 ea
15x10.5 cm postcards	0.55 ea
(set of 20 for \$7.00)	

Please add 10% to your check or money order for shipping and handling (25% for overseas shipments), send to address below.

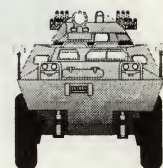
PC Board "TSS On Line", 703 / 720-1067 or 5465, download photo files from "Military Graphics" Subscriptions available, (see logon messages), SysOp Glenn Rossi

P. O. Box 4779, Woodbridge, VA 22194-4779, 703 / 690-3338 (voice), 703 / 490-3298 (fax), arms@cerfnet.com (E-mail)

The world's best Aerospace and
Defense photography
For personal, editorial, and commercial use.



ARMS
communications



THUNDERSEAT

Whether it's the rumble of your jet on full afterburner or the whine of your Indy Car at full throttle, now all PC players can blast off into the next dimension of realism with the **THUNDERSEAT**. ThunderSeat Technologies of Los Angeles has just announced the introduction of the **ThunderSeat Ace**, a new low-cost version of the same patented technology currently used in ThunderSeats sold to the USAF.

ThunderSeat uses the sound output from your favorite sound card with any game or simulation to generate realistic, vibratory sensations. A 100-watt sub-woofer is built into the base of the **ThunderSeat** and is coupled to the wave chamber inside this hollow chair to generate free air resonance. When paired with your amplifier, the **ThunderSeat** will make any of your favorite sims take on a new level of realism, giving you the most accurate motions clues this side of a six DoF motion platform.

ThunderSeats are currently being used by NASA and JPL as well as by major simulator companies such as CAE-LINK, Reflectone, Hughes/Eidetics, and most recently in the McDonnell Douglas Training Systems APACHE Helicopter simulator in Mesa, Arizona. **ThunderSeats** are also being used in a variety of non-military applications, from major amusement parks to Las Vegas hotels.

We have a **ThunderSeat Ace** at our offices, and all I can say is that you have to feel it to believe it. Whether its an F-16, Tie Fighter or Indy Car, the effect is quite amazing. DOOM also was a whole new experience — actually FEELING the recoil of my shotgun blast. Being hit by a salvo of enemy rounds while I sat in my **ThunderSeat** was so real it gave me goosebumps.

Priced at an affordable \$159.95, the new **ThunderSeat Ace** is a winner, featuring a wider, more comfortable seat and a jet-like reclined seating position. Add the optional side consoles and a keyboard holder and you have the perfect setup for both flight simulation and office work. From real Air Force pilots to the PC aviator, **ThunderSeats** are making virtual reality more realistic for everyone.

For more information, contact ThunderSeat Technologies, 6330 Arizona Circle, Los Angeles, CA 90045, or call (310) 410-0022.



**SAME TACTILE
FEEDBACK SYSTEMS
USED IN THE USAF
F-16 SIMULATORS IS
NOW AVAILABLE TO
THE PUBLIC!**











BY JIM BENDER

AVAILABLE FOR IBM PC & COMPATIBLES and PC CD-ROM

DAWN PATROL

The First Air War

Dawn Patrol is a true flight simulation with the emphasis firmly on pilot control and 'seat of the pants' skill. Climb into the cockpit and prepare for the aeronautical experience of a lifetime.

-  Take the controls of one of 15 period aircraft including the Sopwith Camel, SPAD 7, and the Red Baron's Fokker Triplane.
-  Leading Edge Technology provides fully Image Mapped aircraft and landscapes.
-  640x400 SVGA mode gives 4 times the resolution of standard VGA flight sims.
-  A myriad of viewing perspectives (View Matrix) including interior cockpit, multiple external and unique ordnance view.
-  Over 150 missions to accomplish ranging from traditional dogfighting to balloon busting, each with full mission briefing and embedded hypertext.
-  64 pilot biographies allow you to create your own characters from Rookie to Flying Ace.
-  Experience a complete account of the 1914-18 'War of the Skies' and battle for either side of the conflict.
-  Over 30 original anecdotes, speeches and wise words from Commanders and pilots of the era.*
-  The 1914-18 team spirit amongst the airmen is further emphasised through a number of authentic wartime ditties.*
-  A full range of realistic sound effects accompanied by Tchaikovsky's "Capriccio Italien" add the final touch of authenticity.

Forget all other flight sims, Dawn Patrol tests your flying skills to the full against the real pioneer Aces of air combat.

*CD-ROM VERSION ONLY

empire
INTERACTIVE

**Dogfighting will never
be the same again!**

EMPIRE INTERACTIVE ENTERTAINMENT, 13220 WISTERIA DRIVE, BAY N-2, GERMANTOWN, MD 20874

VOICE: (301) 916 9302 FAX: (301) 916 0437

Artwork by Frank Wootton.

©1994 The Greenwich Workshop ©1994 Rowan Software



AVIATION AND SIMULATION

CD-ROMS ARRIVE IN TIME FOR CHRISTMAS

BY BERNARD DY

As the installed base of CD-ROM players continues to grow, there is no doubt consumers will be on the lookout for CD software. In time for Christmas, a variety of classic flight sims and aviation encyclopedias will make plenty of fine gifts. Below is a brief checklist of what to look for.

DYNAMIX

Aces Over Europe is the same game that was released earlier in the year, but includes its documentation online and this features training tips. AOE is the most recent and updated of the Great Warplanes Series, so its engine is the least dated and makes this CD the flashiest of the offerings.

Aces of the Pacific is also presented unchanged from its original version. Value is added to this CD by including the 1946 expansion missions. Currently, AOTP is showing its age and its graphics cannot quite compare to AOE's or other modern kingpins like MicroProse's **1942** or **Fleet Defender**. Still, AOTP is a classic, and it

generates a reasonably complete scope of the WW2 Pacific air war. If you are one of those who is stuck running a CD-ROM player on a 386 or low-end 486 machine, and you want to fly in this theater, the AOTP CD is an excellent way

air warfare, more limited in scope than Spectrum Holobyte's **Wild Blue Yonder**, but perhaps more detailed.

MERIT

Fighter Wing is Merit's networkable flight sim. This CD product will feature modern planes and appears to emphasize the dogfighting aspect of modern air combat. The flight model is expected to challenge Falcon's standard, but the connectivity feature of **FIGHTER WING** should provide plenty of action. It is understood this product can also be played as a stand-alone product.

SPECTRUM HOLOBYTE/MICROPROSE

Wild Blue Yonder looks to be a fascinating product and perfect for the aviation fanatic that enjoys studying aviation history in addition to flying the simulator. This CD-ROM encyclopedia will feature video interviews with pilots, historical combat footage, interactive cockpits, and reference material covering different eras of aviation. **Episode One: 50 Years of Gs and Jets**, and **Episode Two: The Golden Age**, will both be available for Mac and PC. The narration is written by noted aviation historian and author Walter Boyne.

Falcon Gold is the modern fighter pilot's dream package. It includes every commercial Falcon product Spectrum Holobyte has made. This CD-ROM is packed with the latest versions of **Falcon 3**, **Fighting Tiger missions**, **MiG-29**, **Hornet Naval Strike Fighter**, and also includes the **Art of the Kill**.

MicroProse offers the acclaimed **Fleet Defender**, **1942: The Pacific Air War**, and **1943: The European Air War** simulations on CD-ROM. At press time, 1943: The EUROPEAN AIR WAR was not yet released, but the floppy versions of **FLEET DEFENDER** (F-14 simulation) and **1942 THE PACIFIC AIR WAR** (WWII Pacific theater) are both critically acclaimed products. The CD versions will be enhanced and include new missions.



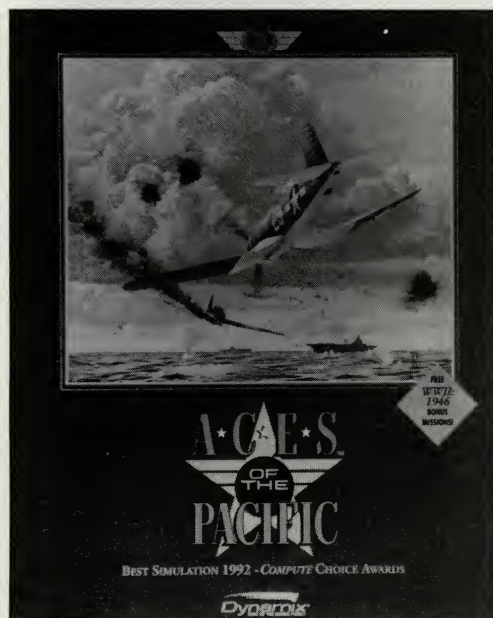
to do so without sacrificing performance.

The earliest entries in the Great Warplanes Series were **Red Baron** and **A-10 Tank Killer**. Both are collected on a single CD to round out Dynamix's aviation offerings. Like AOTP, if you have an interest in either WWI air combat or the A-10 from modern-day exploits, this is a solid choice, and is especially appropriate for users of the 386 platform.

Diversifying the Aces series simulation troupe this year will be **Aces of the Deep**. Slated for both floppy and CD-ROM formats, this game will take the user to new depths by simulating the U-boats of WWII. The CD will also include interviews with German U-boat commanders.

MARIS

From Maxis affiliate Maris comes **Warplanes — Modern Fighting Aircraft**. This was previewed in our last issue (Sept/Oct 1994, page 47). It looks to be a very attractive reference on modern



DOGFIGHTING A SQUADRON

In a head-on encounter, climb to gain an altitude advantage before maneuvering for position. Also climb right away any time you lose sight of the enemy or just can't decide what to do next. Once you get behind a formation of bandits, go after the last one in line. If they're too close too tell, go for the higher one. This avoids the less than effective "tactic" of pulling behind one bandit — and in front of another — simultaneously.

Vertical tactics such as loops and wingovers are often fatal and should not be employed until you've reduced the enemy to one or two planes. High yo-yos, however, and Chandelles (particularly in a Tempest) are effective in multiple-bandit dogfights.

When you can't catch a bandit that's pursuing your wingman, radio the wingie to get on your wing. The bandit will turn to follow your wingman, giving you an opening. He will also lose some altitude as he maneuvers, and you'll be in great shape if you climb briefly before giving the signal. Radioing your wingman to "clear my tail" is a fast way to

TIPS FOR ACES OVER EUROPE

©1994 SHAY ADDAMS,
COURTESY OF SIMULATIONS!

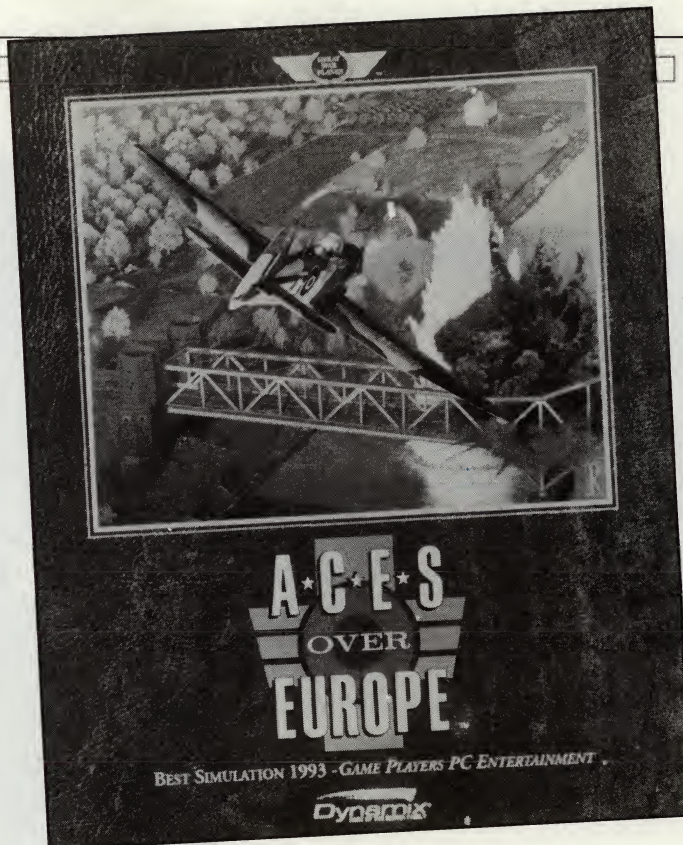
see if a bandit is on your six without taking your eyes of the front view from the cockpit or external view.

BOMBS AND ROCKETS

Check your ordnance before the mission to see if you're carrying bombs, rockets or both. You can't do so once aloft, and the approach angle differs from bombs and rockets.

The tricky part of a bomb run is sorting out the interference, which may consist of flak, fire from ground units, bandits, or all three. Send the entire squad against any bandits. Flak can usually be dodged by jinking vertically as well as horizontally. Keep jinking left, right, up and down. When flak bursts ahead of you, aim straight for it. It almost never hits the same place twice, so you rarely get hit this way.

Dropping the bombs and firing rockets is relatively easy: just line up with the target (from stem to stern of ship, or front to end of a convoy), drop in at a slight angle and hit the pickle button. With rockets, point your nose just in front



of the target, dive a bit longer, then climb and fire as the target passes in front of you. Otherwise, you're more likely to kamikaze into the target.

The less maneuverable the craft, the less steep the angle of approach when bombing or strafing. Smaller birds such as a Spitfire can get away with dive-bombing, but not a Mosquito.

In heavy craft such as a Mosquito, which tend to auger in on low-altitude bomb runs, level bombing from around 4000 feet is safer. When you have rockets and bombs, line up a pair of targets and fire rockets at the first one; drop bombs on the second as you climb over it. Against a lone target such as a bridge, fire rockets on the way in, then level off and drop the bombs.

Don't send everyone after enemy fighters encountered on the way or over the target. Just send the other section, so you and your wingman still have bombs for the target. If there are more than two bandits, send your entire squadron after them. Always engage fighters personally; the rest of the squad is counting on your leadership.

THE PLANES

The more planes you master, the better. When it's time to choose a new squadron, you have chances of being able to pick one with expert pilots, or even with experts and a few Aces (the drawback is that aggressive Aces will steal kills from you). In a Tempest or Spitfire versus the Me 262 jet, you can usually outclimb him (you have a higher ceiling) and eventually put enough distance (in altitude) to hit "a" and get away.

AS A GERMAN PILOT

Learn to identify your deadliest foes, the P-51 and Spitfires. Master the low yo-yo. Concentrate on vertical tactics combined with the yo-yo.

AS AN ALLIED PILOT

Learn to identify the FW 190s, which can outturn, and the 109K, which can outclimb you. Your craft are usually faster and have better climb rates, so hit-and-run tactics are most efficient. □

Sierra's Roberta Williams. ►



Director Peter Maris and actor David Homb.



PHANTASIM

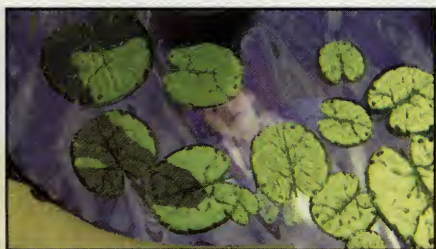
SIERRA DEBUTS NEW MULTIMEDIA STUDIO

**BY JIM BENDER
AND MARIA BOYLAN**

Sierra On-Line Software is celebrating its fifteenth anniversary with a bang! Located in the shadow of the Sierras, just a few miles outside of Yosemite National Park, Sierra Publishing's Oakhurst complex now includes a multi-million dollar multimedia production

facility. Built exclusively to produce multimedia programs, the new studio features a 50 x 50-foot blue screen wall and state-of-the-art camera, editing and recording equipment.

The studio facility allows producers to film live actors against the blue screen background, and to integrate the video



footage into computer generated backgrounds to create a "cinema" effect.

PC COMBAT SIMS visited the new studio during the final week of shooting of **Phantasmagoria**, the first project to utilize the new studio. Unfolding in novel-like chapters, **Phantasmagoria** is the story of a woman fighting for her life against the forces of evil in a large island home once occupied by a famous turn-of-the-century illusionist. Something malignant that had been trapped in the home for 100 years is disturbed by their presence. Its release contaminates the house and slowly infects Don, the husband. The player assumes the role of the wife, Adrienne, who must solve the mystery and ultimately face the evil entity itself. Their salvation is dependent upon

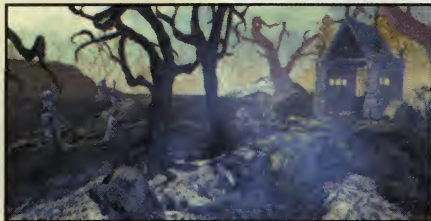


room monitors display the live actors and certain props, computer-generated backgrounds and the overlaid combination of elements.

Phantasmagoria is a CD-ROM psychological thriller created by renowned multimedia writer Roberta Williams, and will come equipped with a special programming "password" option, giving parents the opportunity to choose or tailor the CD-ROM for a less explicit version of the game.

The storyline, in the vein of Hitchcock movies, is filled with terror, intrigue and some mature situations. The tamer version of the game will tell the entire story, while excluding some of the more explicit scenes and elements.

According to Williams, Sierra feels that late teen and adult players are ready to accept a sophisticated thriller that incorporates cutting-edge game technology, film-quality storytelling and advanced production values. "At the same time, Sierra feels a responsibility to parents who don't want their children exposed to violent or graphic games," explains Williams, who is also a co-



COMBAT SIMS that this production is significantly different than a traditional Hollywood film production. "A typical motion picture script runs about 100 pages. **Phantasmagoria** features multiple plot lines that can be selected by the player, with various combinations leading to success or failure in the story. This means that we are shooting a variety of 'paths' that you will explore to solve the puzzle and complete the game." This is Maris's first interactive project, with previous motion picture credits including *Hang Fire*, *Ministry of Vengeance*, *Terror Squad*, *Spirit* and *Diplomatic Immunity*.

Sierra's Technical Director, Bill Crow, is in charge of the new studio. His task is to interface the video production and editing equipment to the computer-generated background "film." Crow's team is using more 3-D rendered video in this project than in any previous game. "Prior games were about 20% rendered video, but with the new studio and technology, we'll move toward 80% in the next couple of years," commented Crow. Motion-controlled shots are created first and linked with the virtual camera on computer, then live actors are filmed and the various elements are edited together into a complete scene.

Phantasmagoria will probably fill three or four complete CD-ROM disks and will feature up to three hours of live video necessary to accommodate the plot options.

A visit to the prop department unveiled an assortment of bizarre torture paraphernalia and gory prosthetics including a skull with a very large axe stuck in it and a couple of very dead bodies. The extensive attention to detail and a large library of digital sound effects and special visual effects promises to make **Phantasmagoria** a thriller to be experienced!

Roberta Williams is best known for the adventure hit *King's Quest* and Sierra has published many other top programs including *Quest For Glory*, *Space Quest*, and *Alien Legacy* (see review in this issue). What will this new million-dollar facility yield in the near future? According to Bill Crow, they've been wondering if interactive video will have any application for hit flight sims such as the *Aces* series by affiliate Dynamix. Crow feels that it will take a while to integrate any first person video into the type of flight sims currently in production, at least in any meaningful way. Other possibilities include a "behind

PHANTASMAGORIA

Adrienne's ability to put the pieces of the puzzle together and overcome the malevolence that has twisted her mate into something lethal...

Our backstage tour included observing the filming of several scenes that feature actress Victoria Morsell as Adrienne, the lead character. Control

founder of Sierra. The ratings option will be prominently displayed on the CD-ROM packaging.

The year-long **Phantasmagoria** production included four months of filming and involved 20 live actors, over 500 camera angles and a 400-page script. Director Peter Maris told **PC**

the history" look at U-boats to tie into the Aces Of The Deep CD-ROM, and the very obvious link to first-person action in squad-level combat scenarios. The makers of Police Quest may be looking to include you in the next "line-up"! You can be sure that the next year or two will produce technological leaps for Sierra and fantastic new worlds of interactivity for players!

UPDATE: OUTPOST IN THE SIERRAS

Our visit to Sierra included a meeting and background briefing with **Outpost** producer Bruce Balfour. Having met Bruce, I have even more respect for the **Outpost** project and a better understanding of the problems they had bringing out the program. I spent over 100 hours playing the simulation prior to my review and was concerned about the lack of roads, monorails and trading.

I reviewed version 1.0 prior to receiving version 1.1 which includes a beginners level, complete tutorial and much more detailed read me files. It does seem, however, that the addition of music has slowed down CD access when placing tiles, which was very fast on



Sierra's new video production studio in Oakhurst, California. Photo by Maria Boylan

version 1.0 but takes up to 10-20 seconds per tile on version 1.1 when the screen is full of buildings. This slows down the game on my system and would add extra hours to a regular game.

Bruce states that a medium or hard level game of **Outpost** will take over 2500 turns to complete! That's after you've become familiar with the program. Per my previous review, you'll need some time using the cheat keys to

perfect your play before venturing into a marathon "settlement." The cheat keys are: Control F11 for unlimited resources, and Control F12 for unlimited morale.

Outpost is a challenging and very enjoyable simulation. It does not feature any combat or flying, but neither does Sim City! Sometimes you just need a non-violent break, and **Outpost** can fill the bill. So choose your colonists, pick a star system, and head on out... □

No More Hassle.

Tired of fumbling with joystick cables behind your computer? Are you spending more time changing joysticks than playing your favorite games? You need a hassle-free alternative: the **Joyswitch™**. At last you can jump from joystick to joystick, game to game, with the speed and ease of turning a switch. Connect up to four devices (flight sticks, yokes, steering wheels, game pads, etc.) and two sets of foot

controllers (rudder or gas / brake pedals) to your computer. Maximize your performance by switching to the "right" joystick for each game,

instead of using whichever one happens to be connected to your computer. Get greater value from your expensive, specialized controllers. The Joyswitch works with most

IBM PC compatible controllers. Joystick extension cable included for FREE! **Order TODAY! Only \$59.95.** Suggested Retail Price



To order call: (714) 362-8698

OR

Order on Check Six BBS
(714) 362-8299 (8-N-1 1200-28.8kb)



CUTTING EDGE



"Bandit at three O'clock!"

You shout to your wing man as the MiG slashes through the air.

Instinctively, you grab the THRUSTMASTER F-16 FLCS stick, punch the afterburner and take your Falcon into battle.

G-forces rip at your body as you tear through the sky in pursuit. Adrenaline causes your hand to tremble as you work the fully programmable hat switches and buttons.



Instantly, track your enemy and choose the weapon of his destruction.

You pull hard right and fall in on his six. "I have a lock!" Squeezing the two stage trigger, a Sidewinder slices through the air - to the kill.

THRUSTMASTER F-16 FLCS

- * Unlimited Programmability
- * Unparalleled Performance
- * Uncompromising Reality

THRUSTMASTER®
THE REALITY SPECIALISTS

10150 SW NIMBUS AVENUE PORTLAND, OR 97223 - 4337 PHONE (503) 639 - 3200 FAX (503) 620 - 8094

THE SIM SCENE

(continued from page 6)

Star Trek detail of space civilizations, the Bridge, the characters and their history. For the novice player, **A Final Unity** offers hints within the game as a means to "guide" the player.

A Final Unity is a Star Trek epic in the grand tradition. Players embark on missions for the Federation and find themselves caught up in an unfolding mystery with the crew of the Starship Enterprise. The player must maneuver the Enterprise within a 3-D tactical space, beam down Away Teams to investigate alien planets, explore many of the hundreds of stars within known space and use the vast resources of the giant starship to meet the challenges that await. As ever with Star Trek, combat is a last resort, to be employed only when all diplomatic means have been exhausted!

Spectrum Holobyte is developing **Star Trek: The Next Generation "A Final Unity"** in cooperation with Paramount Pictures and Viacom Consumer Products, to present a Star Trek simulation that includes all the key elements of this highly successful TV series.

A Final Unity will be available in two boxed versions: The Collectors Edition, a limited edition set, which will include an



STAR TREK: The Next Generation by Spectrum Holobyte.



The Bridge of the Starship Enterprise by Spectrum Holobyte.



Top Gun School, TOP GUN by Spectrum Holobyte.

TOP GUN by Spectrum Holobyte.

LCD Star Trek pin, special poster and custom box, or the regular edition.

The program will contain all the TV series elements familiar to Star Trek: The Next Generation viewers as well as new aliens that will populate the new worlds being developed by a staff of full-time writers. Players will have complete control of fully animated characters that speak with the voices of the actual series actors. Our sneak peak at the work in

progress assured us that **Star Trek: The Next Generation "A Final Unity"** will go where no game has gone before!

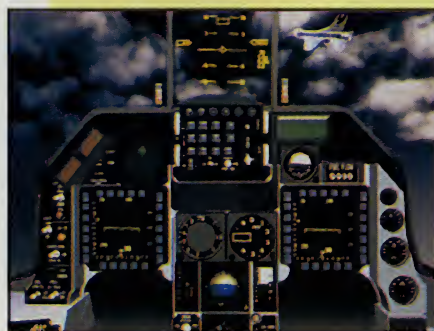
TOP GUN PC CD-ROM Spectrum Holobyte's **Top Gun** combines industry-leading flight simulation technology with one of the most popular action / adventure movies in history, resulting in a fast-action, easy-to-play game designed to appeal to both novice and accomplished

flight sim fans. Stunning 3-D animation, live actors and a first-rate flight simulation are combined to bring **Top Gun** to life and to put you in the cockpit.

Top Gun features a unique approach to flight sim control, providing sim-pilots with an artificially intelligent "back-seater" that will handle much of the more complex tasks normally associated with Spectrum Holobyte's state of the art flight sims. Your backseater will operate the radar and other complex systems such as

selecting and classifying targets, while providing voice cues and tips that will help you succeed with your assigned missions.

You play the role of Maverick, backed up by Goose, everyone's favorite "Guy In Back", while you attend flight training at the Top Gun school, then proceed to missions that expand the storyline of the movie. Scenarios include Cuba, the Phillipines and the Middle East, as you pursue



Cockpit from FALCON 4.0 by Spectrum Holobyte.



F-16 from FALCON 4.0 by Spectrum Holobyte.

your elusive foes, an international cadre with bad attitudes, itchy trigger fingers and big afterburners. These guys will taunt you and try to sucker you in, so maintain your cool as you fly over 30 missions.

Picture-in-picture technology will let the mercenaries get right in your face in the cockpit, but it will make your access to other critical flight and target information a lot easier. Network play will be supported, with two sides of up to four pilots able to face off for heavy-duty air to air combat.

Top Gun features 3-D locations like the Top Gun School, briefing room, mission planning room, war room, C.I.C. and the flight line, plus a detailed SVGA cockpit and a very high frame rate for realistic air combat action.

Top Gun is planned for release in the first half of 1995 and will incorporate some elements of the Falcon 4.0 design.

FALCON 4.0 PC CD-ROM Flight simulation fanatics have been waiting to see what Spectrum Holobyte will do to improve on their immensely successful series of Falcon 3.0 products. Set for release in the second half of 1995, **Falcon**

4.0 is well underway, with a year of development time still on the mission clock!

Falcon 4.0 will be an entirely new simulation, and each product in the new series will be a stand-alone program that can be networked with the other new releases, due one per quarter. New scenarios in 4.0 will include Korea and possibly the Eastern European / Russian Steppes area. 600 by 600 mile campaign areas ensure plenty of political action in **Falcon 4.0**. The accent, as usual, will be on dogfighting, but with plenty of high-tech air-to-mud thrown in. Listen for the voice of the new forward air controller as you near your target area.

A new training mode will help ease the learning curve. You'll view a film of your mission or assigned maneuvers, then you'll fly a two-seat F-16 with an instructor pilot who talks you through your lesson. Later on, you'll follow the instructor in your own plane. This is what Spectrum designers call the "see it, hear it, do it" method of flight training.

The latest satellite mapping technology will be used to provide the most realistic scenarios possible, as you start out as a Second Lieutenant rather

than a Colonel. You'll have the option of being the wingman, a section leader or a flight leader so you can work your way up through the skill levels.

Falcon 4.0 will provide a "seamless in-and-out" clock that will keep things happening even if you have to step out to the local convenience store for a six-pack... the world doesn't stop when you shop, Ace!

Totally new graphics, advanced AI, and current aircraft such as the advanced versions of the SU-27, the F-16 AFTI and MiG 29 fly-by-wire will be incorporated into this all-new simulation.

Follow-on programs may get into air-to-ground missions in A-10's and there may even be a helicopter or two in your future logbooks!

Network play will certainly be supported, since Falcon 3.0 set the standard for multiplayer network campaigns.

1995 promises more action for sim pilots as the growing flight simulation field outpaces the collapsing military aircraft industry. It should be exciting! See you at base plus 4.0!

- Jim Bender

VALUE PACKAGE
Games Master console & choose any six matts
ONLY \$129.95

ROM CHIP Upgrade #1
Include codes for Matt No. 1-49
\$14.95 Each

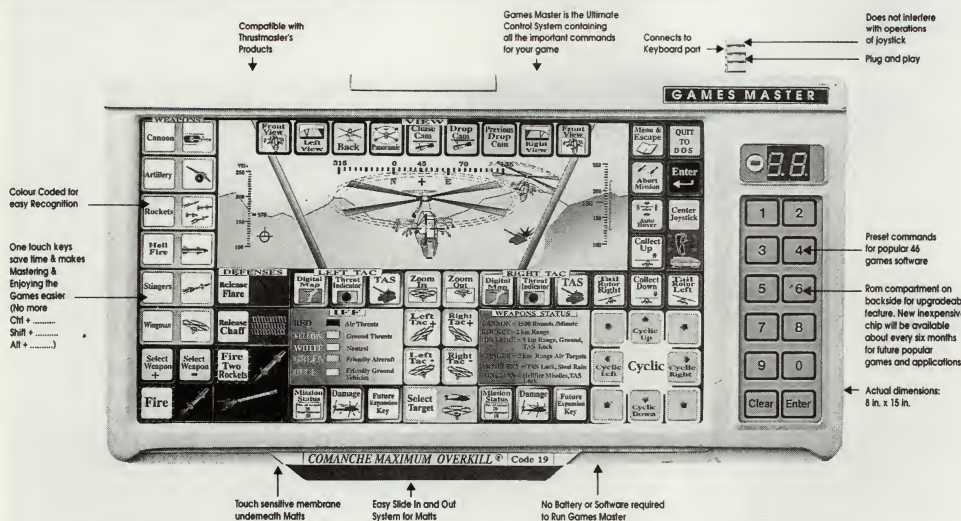
BASIC PACKAGE
Includes Games Master Console & Keyboard Normal QWERT Matt
Only \$69.95

MATTS
\$14.95 Each

NEW PRODUCT
GAMES MASTER™
TOTAL CONTROL SYSTEM!

UPGRADE VERSION AVAILABLE NOW!
NOW SUPPORTING

1. FLIGHT SIM 5.0
2. HORNET
3. ACES OVER EUROPE
4. TIE FIGHTER
5. FLEET DEFENDER F14
6. 1942 PACIFIC AIR WAR
7. ACADEMY WING COMMANDER
8. PRIVATEER WING COMMANDER



System Requirements
IBM AT, 286, 386, 486, PS/2, PENTIUM
Tandy AT or 100% Compatible

©1993 Keyboard and Terminal Technology (U.S.A.) Inc. (KATT)
Games Master Total Control System is a registered trademark of Keyboard and Terminal Technology (U.S.A.) Inc., New Jersey, U.S.A.
IBM is a registered trademark of International Business Machine, Inc.
All other products are registered trademark or trade names of their respective companies.

Yes, I want to take control of my games and try Games Master risk free for two weeks.
Payable: **Keyboard and Terminal Technology (U.S.A.) Inc.**
to 17-1 Lincoln Place, North Brunswick, N.J. 08902, U.S.A.
Tel: 1-908-297-5399 Fax: 1-908-297-5399

Name _____ Country _____
Address _____
City _____ State _____ Zip _____

Method of Payment (Please check one)
☐ Check ☐ Money Order ☐ COD
Your order will be shipped within 5 days

Qty.	Amount:	Prices:
Basic Package	_____	Basic Package \$ 69.95
Value Package	_____	Value Package \$129.95
Matts	_____	Matt \$ 14.95
Sales Tax (NJ Res 6.00%)	_____	Rom chip Upgrade No. 1 \$ 14.95
S & H	_____	Shipping & Handling: All orders: \$ 4.00
COD Add \$4.50	_____	COD: 2 day service add: \$ 7.00
2 Day Air Delivery Add \$7	_____	Canada add: \$ 8.00
TOTAL	_____	Intl add: \$ 35.00
Two weeks risk free. Money back guarantee		For info and orders: 1-908-297-5399

Qty.	Qty.
Value Package includes:	
Games Master Total Control System and choose any matts	20. Megafortress
Basic Package includes:	21. Red Baron
Games Master Console & Keyboard Normal QWERT Matt	22. Red Storm Rising
Rom Chip Upgrade #1 includes:	23. Secret weapon of the Luftwaffe
codes for Matt No. 1-49	24. Silent Service II
Matt	25. Special Forces
1. Keyboard Normal ABCD	26. Shunt Island
2. Keyboard Normal QWERT	27. Task Force 1942
3. Keyboard	28. Ultima Underworld
4. Aces of the Pacific	29. Wing Commander
5. ATAC	30. World Circuit
6. Birds of Prey	31. X-Wing
7. Civilization	32. Air Warrior
8. Chuck Yeager's Air Control	33. A-10 Tank Killer
9. Falcon 3.0	34. ATP
10. Flight of the Intruder	35. Harrier Jump Jet
11. Flight Simulator 4.0	36. Mig-29
12. Flying Fortress B-17	37. Spectre
13. F117A	38. Strike Commander
14. F-15 II	39. Tornado
15. F-15 III	40. Ultima Underworld II
16. Gunship 2000	41. Ultra Bots
17. Jelfighter II	42. Flight Simulator 5.0
18. Mantis	43. Hornet
19. Comanche	44. Aces Over Europe
Maximum Overkill	45. Academy Wing Commander
	46. Privateer Wing Commander
	47. Tie Fighter
	48. Fleet Defender F-14
	49. 1942 Pacific Air War

THE BATTLE OF BRITAIN

REVISITED

BY JIM TITTLE

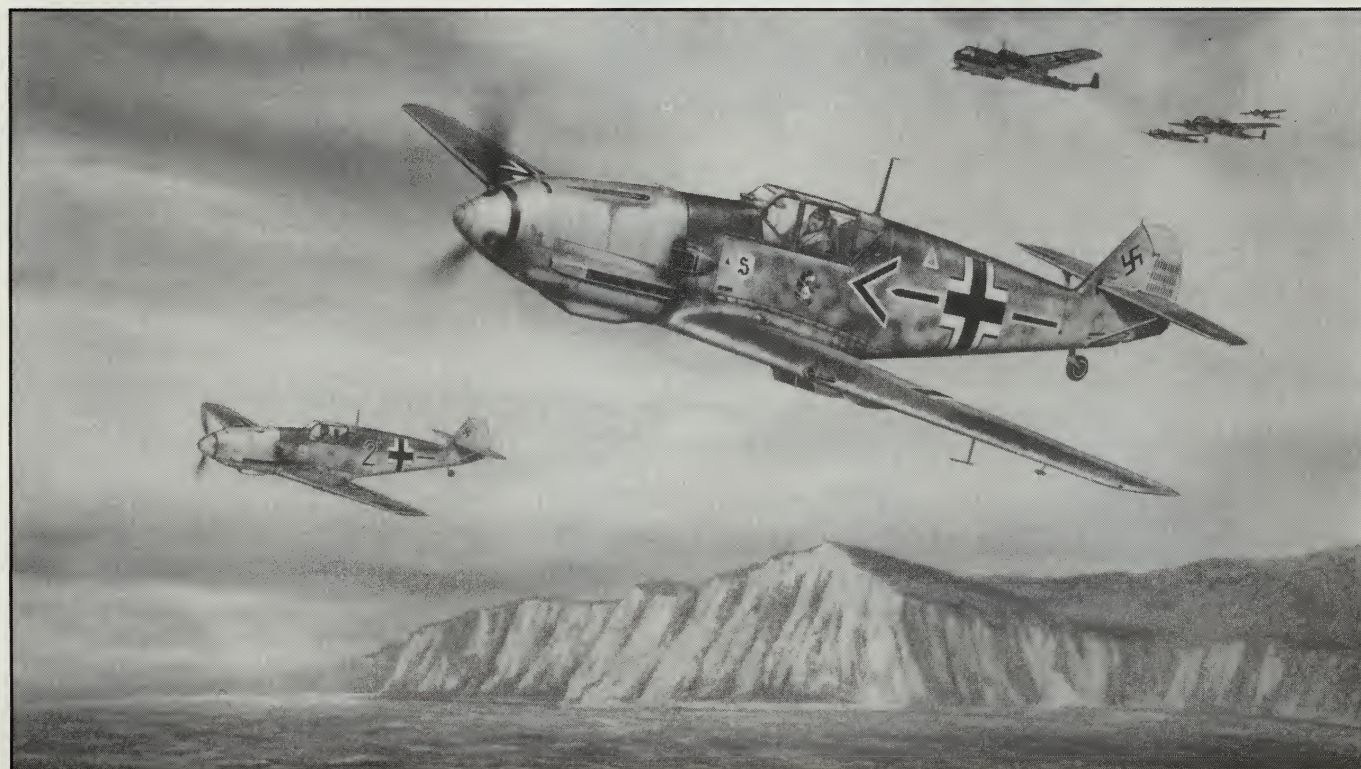
Lucasfilms scored a direct hit with their first **real** combat simulator, **Their Finest Hour: The Battle Of Britain**, in mid-1990. I call it their first even though **Battlehawks: 1942** pre-dated it.

I consider BH 1942 just too crude to be entertaining, given what's evolved since then. It was pretty good for its time, but everything from video graphics to flight response has improved many fold. **Battlehawks** is to combat sims what Pac Man was to other styles of video skill games, fairly amusing relative their times and competition but soon to be eclipsed.

Battle of Britain was a landmark entry into the complete World War Two

campaign-style combat simulator era that BH only hinted at. The concept of commencing a tour-of-duty type of sim with several aircraft to fly on both sides really stokes the imagination opposed to single missions with a single aircraft without an aggregation of victories and points.

What a great feeling to crank up the computer and anticipate rolling up your continuing score against the enemy. And hardcore aerial combat sim fans know how addicting that can be! **BOB1940** (the directory name the program creates) made the fantasy a reality for World War Two air combat apostles. The gun camera film, the variety of aircraft on both sides, the mounting victory scores, and player-



Adolf Galland by Jerry Crandall.



Battle Of Britain, Wing Commander Geoffrey Page by Jerry Crandall. For more information, call (800) 255-1830.

designed custom missions all came together in one fantastic bargain of a simulator.

BUT IN 1990 IT WAS TOP GUN

When I first got **BOB1940** I was running a 286 computer platform. The flight characteristics of all the planes was crisp. Perhaps too crisp in some respects, to be accurate. Loops, for instance were accomplished with the speed of a stunt biplane. But re-installing on a 486 brought things more into perspective.

The depth perception and closing rates still seem to be difficult to judge even for the experienced pilot. The enemy plane looms large but is still out of range. If in Lucasfilms **Secret Weapons Of The Luftwaffe** or the Dynamix Aces scenarios the enemy planes appeared that size I'd be filling them with holes. In **BOB1940** effective gun range is just too indistinct and you waste ammo.

That brings us to another minor flaw. Though inaccurate, I like the screen message present in later sims informing you that you have been credited with a

victory. I rationalize the message as a radio call from a flight group member saying "You got him!"

As with more modern sims, you can decrease the amount of ground detail in combat for better visibility and a tad quicker response. The doubling of time and speed with the "T" key is adequate for the short distances to speed home just across the Channel.

Landing characteristics with all planes is very forgiving and the runways are long. Simulators produced later are more accurate but are more difficult to land with. A perfect compromise would be an "Easy Landings" preference toggle in a pull down menu for all future simulators.

Views to look outside of your plane are accomplished by using the number keypad. The only lack is a straight-up view. Bomber gun position changes use the same keys and works well.

THE AIRCRAFT

That brings us to the bombers of which there are five: Ju-87, Ju-88, Me-

110, He-111, Do-17. Only the Germans are included which is historically correct since the RAF was engaged in a defensive fight in 1940.

The Ju-87 Stuka is a **very** accurate dive bomber. Once you deploy the dive brakes you just float down with plenty of time to zero in the target, just like the real Stuka. The 999 rounds of two-20mm give good forward defense and make it possible to knock down RAF fighters if you're good.

The He-111 is as slow and cumbersome as the real one and is soon little fun to fly. The Ju-88, on the other hand, is a honey for a big plane. It's fast, relatively maneuverable, and well-armed. With gun stations on "Auto" you can pursue British fighters for you sim gunners to deal with. On all bombers you can switch to "Manual" and convey more accurate fire.

I've never been good at level bomb delivery, but with dive brakes the Ju-88 excels as a dive bomber.

The Do-17 runs a close second to the simulator capabilities of the Ju-88.



Flt. Lt. Alan C. Deere by Jerry Crandall.

Though it lacks dive brakes, it has two lateral gun positions to offset it.

The Me-110 is formidably armed with two 20mm cannon and four 7.92mm machine guns up front. You experience the same trade off the **Luftwaffe** did, lack of maneuverability. The simulated version is very preferable over any of the other German bombers included since it can be flown very well as a strike fighter.

The Bf109E is, true to life, a bit less maneuverable than the Spitfire and Hurricane. Its two 7.92s have plenty of ammo to range in the two 20mm's 60 rounds for the kill.

The eight .303 machine guns on the Hurricane and Spitfire do not have the punch of the 20's but they put out adequate firepower to make the kill. Both fly well enough to make for good aerial engagements.

A PATCH FILE, PLEASE!

All the aircraft in this simulator need a shot of vitamins, though. If the response to control was improved and a programming equivalent to horsepower was injected the sim would be less lethargic. This would not be major work to the original program writer to produce a patch file with 1994 performance.

The battle map does not have a zoom-in feature as the later **Secret**

Weapons Of The Luftwaffe and the updates as to where enemy aircraft are is not up-to-second info. But you can imagine that 1940-era British radar was not yet perfect. It wasn't. But the distance to location is reliable.

THE BEST PARTS

Custom Missions is really quite a feat of simulation in itself. As you construct your mission you are literally writing a program file with the mouse pointer as you click on your preferences! In the later **Secret Weapons** sim you can really produce some great "what if" scenarios, but **BOB1940** was the real beginning of the idea.

I enjoy the option of mission time-of-day, or night. The later **SWOTL** has no night flying option. Dynamix ACES missions arbitrarily throws you into night missions during your tour but the screens' resolutions are so dark the best you can hope for is to survive and shoot down an enemy that flies into your sights. **BOB1940's** night screens allow clear enough visibility to be an aggressor. Total exactness is not always best for playability.

The gun camera playback feature is interesting as a debriefing tool to allow the beginner to see how far he is missing with his ordinance. You can switch to view your mission from outside of your

plane and back to the cockpit too.

When you become more proficient it is nice to relive a particularly good mission. Plus, you save the film as long as you wish.

One final feature of note is the Campaign Battle aspect. The pilot/strategist can manipulate the variables of the Battle of Britain's historic authenticity from either side and participate in combat flights that contribute to the outcome.

Video graphics, animation and flyability have improved dramatically since **Battle Of Britain** hit the shelves. **Secret Weapons Of The Luftwaffe** was the next logical improvement for Lucasfilm over **BOB1940**, but it is built on **BOB's** strong foundation. Flexibility is the key that some other later sims still miss the mark on.

The planes **are** a little slow when compared to today's cutting edge sims. But the design logic of the program format works well for me and I think it will for you too.

Whether you're new to combat flying simulators or an old hand, **BOB1940** has something for you. Besides, Lucasfilm has combo packs with **Battle Of Britain**, **Secret Weapons Of The Luftwaffe** and **Battlehawks** for around \$20 in your stores now!

So grab a piece of aerial combat history. And always check your six! □

SOMEONE OUT THERE WANTS TO DESTROY YOU.



BET ON IT.

Lonely at the top? Don't believe it. You're top rated, and there's a crowd of cyberpunks just waiting to take you down.

But you're up for it. You and your stable of 10 Herculs. Pure fighting machines, in riveting 3Space graphics, articulated perfectly to prowl the drome—to seek and destroy, fight toe-to-toe—and battle with cunning, power and skill.

No, getting on top wasn't easy. But you're smart and you set the perfect battle conditions. You chose the weaponry, the right Herc, even the right music. And you bet smart. Building a stash to buy new weapons, new Hercs and enough cold cash to back up your boasts.

With real time modem play, you can be challenged by anyone, anywhere, anytime. Nice touch—reach out and blast someone. Of course they've challenged you before. And they've lost. So far.

Yeah, someone out there wants you. So let 'em come and place their bet. Then let's see if they've got the ballistics to go up against number one.

Battledrome—blast into the MetalTech era.

HIGH-STAKES ROBOTIC COMBAT
MODERN READY

Dynamix
PART OF THE SIERRA FAMILY

Available at retail for
IBM/compatibles or call
1-800-757-7707

METALTECH™

BATTLEDROME™

I recently got to fly with the fabulous Blue Angels, the Navy/Marine flight demonstration team! Wow! I was strapped into my seat in a McDonnell Douglas F/A-18 Hornet with Marine Captain Ken Switzer at the controls of Angel #5, the Lead Solo aircraft. We joined up in a diamond formation for some exciting close formation maneuvers, including one where "The Boss," #1, was inverted compared to the rest of us! We twisted, zipped and zagged through the sky, at times only 36 inches from the other Hornets.

Then we took on the Opposing Solo, #6, in head-on knife-edge passes, and dropped right above the water to buzz Pensacola Beach together. Through the whole flight I was jostled, jolted, shaken, bounced, and tilted, depending on the maneuver in progress — and loving it!

When it was all over, I unbuckled myself from a sophisticated computer programmed and hydraulically-operated motion base — then came back to reality. I had just taken a \$5 four-minute ride in Iwerks Touring Technologies' Reactor 18-seat mobile simulation theatre.



FLY WITH THE BLUE ANGELS

THE REACTOR THEATRE

This high-definition theatre is set up from a 75-foot long tractor-trailer rig. A Sony laser projection system produces true-to-life images on a 9-foot by 16-foot screen. A digitally-recorded six-channel Surround-Sound system, together with the moving seats, creates a sensory impact experience that transports you into a new dimension of sight, sound, and motion.

I wanted to know how this sensational physical/visual experience was accomplished. I contacted Iwerks and they put me in touch with their motion base programmer, Paul Pieper. Although Iwerks produces several types of stationary movie-based specialty theatres around the world, I just wanted the details of the on-the-road mobile Reactor theatre.

Paul, who graduated from California State University in film technology and computer science with a goal in special effects and motion control, has been programming at Iwerks for two years.



BY FRED BLECHMAN



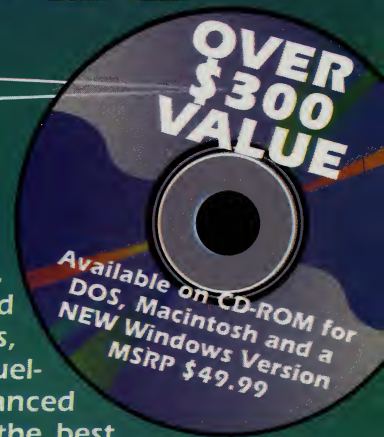
he most popular computer
naval simulation ever
JUST GOT BETTER!

HARPOON

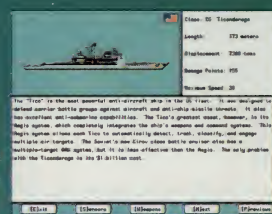
CLASSIC



Harpoon CLASSIC CD is ready to give you hundreds of hours of naval warfare enjoyment. Alliance Interactive Software has updated and combined all the original HARPOON products, added cool new features such as, air-to-air refueling, forty-eight new scenarios, and an enhanced user interface, all to bring you the best of the best. You now have over 200 scenarios, all 4 BattleSets, 3 Designers Series and the Harpoon Scenario Editor on ONE CD-ROM (and yes it runs from the CD-ROM*). Over \$300 worth of great naval simulation software, all for only \$49.95 (MSRP).



User friendly interface allows you to view the big picture and individual unit information at the same time.



Comprehensive database contains detailed information of sensors, weapon systems and platform capabilities.

NEW FEATURES

- ★ 48 New Scenarios (over 200 total)
- ★ Enhanced User Interface
- ★ New Digitized Sound Drivers (PC)
- ★ Air-to-Air Refueling
- ★ Upgraded to Version 1.5

AWARD WINNING

- ★ "Top 40 Best Games of All Time" PC Gamers 1994
- ★ "Hall of Fame" Computer Gaming World 1992
- ★ "WARGAME of the Year" Computer Gaming World 1990
- ★ "Best PC WARGAME" Game Players 1990

INCLUDES

- ★ GIUK: Battleset #1
- ★ NACV: Battleset #2
- ★ IOPG: Battleset #3
- ★ MEDC: Battleset #4
- ★ Harpoon Designer Series #1
- ★ Harpoon Designer Series #2
- ★ Harpoon Designer Series #3
- NEW!**
- ★ Harpoon Scenario Editor
- ★ 800x600 graphics for Macintosh and Windows

Approx. 2MB free on your hard drive required. Available at your local retailer or call 1-800-870-0920. For upgrade information call Alliance Interactive Software at 1-305-423-4289. Harpoon is a Registered Trademark of Game Designer Workshop. Harpoon Audio Visual copyright © 1988 by Applied Computing Services, Inc. Harpoon Computer code portions copyright © 1990-1993 by Three-Sixty Pacific, Inc. Harpoon Computer code portions copyright © 1994 by Alliance Interactive Software, Inc. and Applied Computing Services, Inc.



Alliance Interactive Software, Inc. • 1859 N. Pine Island Rd. #103 • Plantation, FL 33322
(305) 423-4289 • Fax: (305) 424-9054

WARPLANES

INCLUDES 3 GREAT FLIGHT SIMS!

MODERN FIGHTING AIRCRAFT

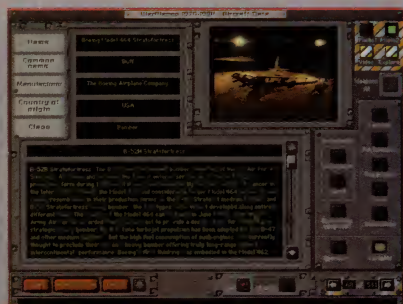
The ultimate encyclopedia of modern aircraft and aviation



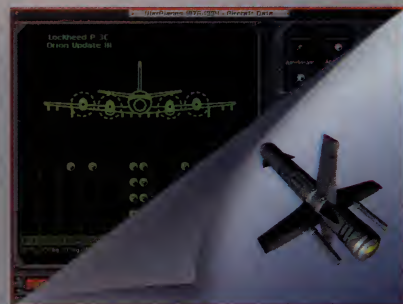
What is the top speed of an F-16? Which air tactics proved decisive in the Gulf War? How many nuclear-capable planes are there in North Korea's air force? You'll find the answers to all your questions in WARPLANES—Modern Fighting Aircraft: the definitive database of military aviation statistics covering the period from 1976 to the present. See the world's great warplanes in amazing interactive 3D and fly missions in three great flight sims: a Soviet Su-27, the A-10 or C-130 Hercules. WARPLANES—Modern Fighting Aircraft is the first disc in Maris' multi-volume CD-ROM series. For all the facts, plus thousands of stunning photographs and hours of video and animations, you'll want to collect them all!



LEARN ABOUT THE WEAPONS
AND TACTICS USED IN COMBAT



VIEW OVER 500 WARPLANES,
1,300 PHOTOS PLUS LIVE
ACTION VIDEO FOOTAGE



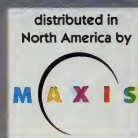
RESEARCH THE ARMAMENTS
CARRIED BY THE WORLD'S
WARPLANES



MARIS

ON CD-ROM
FOR MACINTOSH
POWER MACINTOSH
OR WINDOWS

Available now at your local
software retailer or call
1.800.336.0185
for MC/Visa/AmEx orders



MAKING A MOTION

Although we tend to think of three types of motion in an aircraft — roll, pitch, and yaw — there are really six types of motion, as shown in Figure 1. Likewise, there is not only angular rolling around the longitudinal axis, but there is also linear motion (forward and backward) along this axis. Likewise, there is not only angular pitching around the lateral axis, but also linear motion (left and right). Similarly, there is not just angular yaw around the vertical axis, but also linear motion (up and down). Paul tells me that in the simulated motion field, the linear motions are called "surge," "sway" and "heave," respectively, (also shown in Figure 1).



THE SEATS

I asked Paul first about the seats. Each of the traveling Reactor theatres has nine two-seat modules, and each seat can hold a person weighing up to 350 pounds. Each individual seat has a seat belt, and each two-seat module has its own dedicated hydraulic, electrical, and electronic systems.

Each of the nine two-seat modules has its own set of three hydraulic cylinders, a pump, and a printed circuit control board. The cylinders each produce one of the three seat motions: heave, roll and pitch. That is, they move the seats up and down, roll them left and right, and tilt them forward and backward — and can perform all three motions essentially simultaneously. 20W50 motor oil, operating at 750 pounds per square inch pressure, is used in the hydraulic cylinders.

Of course, there are limits to seat motion. The vertical movement is one foot, with a travel speed of 15 inches per second. The seat can roll left and right 31 degrees each way from vertical, and pitch 41 degrees each way forward and

backward from vertical. In addition, vibration can be programmed in all motions.

THE PROGRAM

An IBM PC (286 or 386) microcomputer reads a 25,000 byte program that has been created specifically for the particular film being run. Signals are fed through a data cable to a printed circuit control board. The control board provides electrical signals to cylinder valves that control the stroke of each motion cylinder, with linear transducers on each cylinder providing positional feedback.

I wondered about the program itself. How was it generated? According to

Paul, it starts with the film. In order to capture the excitement of flying with the Blue Angels, Iwerks worked with the U.S. Navy to mount a special camera pod onto Hornet #5. This is the first time a camera has been mounted on the outside of a Blue Angels Hornet, yet it was able to fly the normal routine,

including 6.5 Gs and Mach .98, with the camera running.

Once the film is edited down to about four minutes of scenes that can be best simulated by the Iwerks seat modules, Paul goes to work with two computers and a 42-inch rear projection screen on which he watches the film.

One computer is connected to a control panel that has eight sliding rheostats to program the action of the hydraulic cylinders. As he watches the film, Paul manipulates the rheostat settings to create the motions that will simulate the screen action. (This is kind of like the Wizard of Oz in the Emerald City, twirling knobs to create the fierce images for Dorothy and the others. "Don't pay any attention to that man behind the curtain!") Three of the controls are for the primary seat motions. Two are used for creating

jitter in the heave and roll motions. The remaining three are set to prevent cylinder bottoming.

Custom software is used to feed Paul's control signals back into the computer so the program can be saved as a program file. This program file is then loaded into the other computer, a plain IBM PC, which is connected to the seat modules. Paul then takes a seat, runs the program, and checks to see how the whole thing plays. Then it's back to the control computer and rheostats to tweak it here and there until Paul has a good simulation.

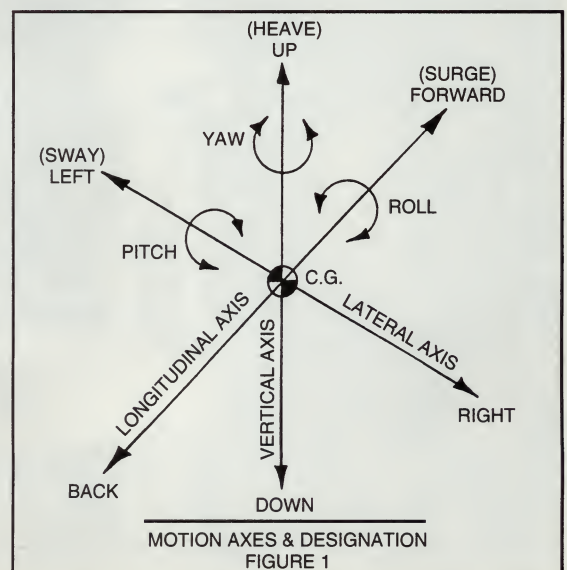
While some effects, such as sustained Gs or inverted flight, can't be closely simulated with the Iwerks system, the flight scenes chosen avoid maneuvers that would require those effects. The scenes used are simulated with some exaggerated motion to make the effects more pronounced. The result is one wild ride!

TEN REACTORS

Ten tractor-trailers equipped with Iwerks Reactors tour the U.S. and Canada, setting up their 18-seat theatres at airshows, fairs, museums, and festivals. Once the Reactor arrives at its destination, it only takes eight hours to set up. It can run 10-12 shows an hour, with a daily capacity of 1800-2160 people. Strike time is only six hours.

In 1994, "Fly With the Blue Angels" was scheduled to appear at over 250 events, with an estimated attendance of over 2.8 million people that had the opportunity to experience some of the thrills of flying with the Blue Angels.

For further information, call Iwerks Touring Technologies, (714) 756-0900. □



TIE FIGHTER

(continued from page 12)

COMPLEX GOALS

Another very satisfying part of the game involves multiple mission goals arranged into groups. **Tie Fighter** has multiple primary, secondary, bonus, and secret goals for most missions. The pilot need only complete the primary goals to move on to the next mission, or the game controls can be set so that you can refly the mission, either immediately or after rebooting the game later, until you are satisfied with your performance. Missions which you do not like can be completed at a minimal level, while other, more enjoyable, missions can be savored over and over for full enjoyment.

Tie Fighter has more of a role-playing flavor than earlier X-Wing games. The pilot has more choices when it comes to completion of mission goals, and the role-playing related cinematic sequences are more flexible. Each mission, save one, is preceded by a briefing with the briefing officer. Some missions allow the player to join with the Secret Society of Emperor Palpatine, and be briefed prior to missions on the goals of the secret society. After each mission there is debriefing by the briefing officer and the hooded figure of the secret

society. Each mission has pure military goals and goals of the Emperor's dark forces. Thus the multiple goal levels are further enhanced by this second tier of responsibility.

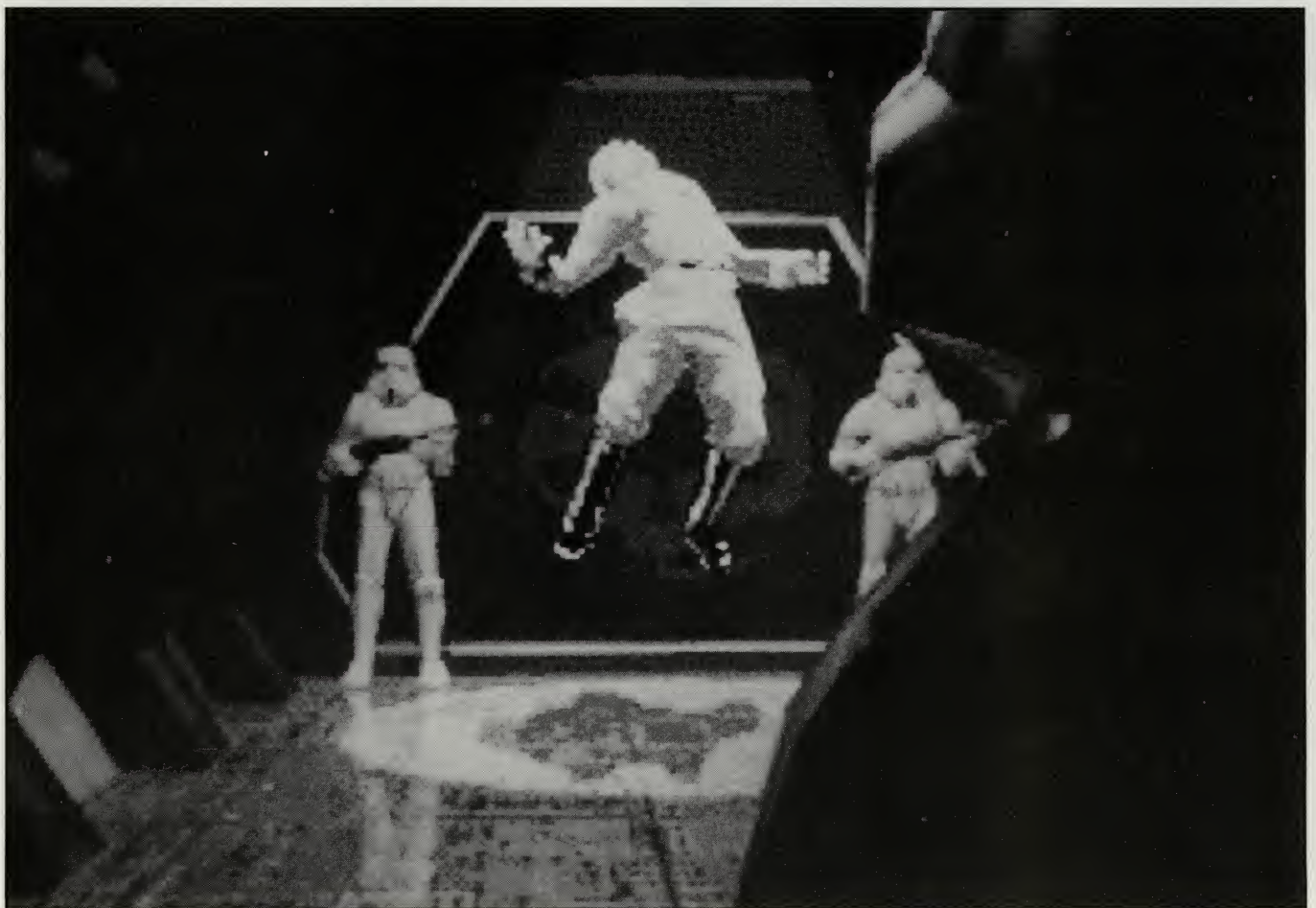
Progression through the six circles of the secret society is awarded at the Imperial palace. The appropriate animated cut scenes and graphics of the Imperial palace were designed by Jon Knowles, from the description in the Star Wars science fiction novels by Timothy Zahn. While progression through eight Imperial ranks, from Flight Cadet through General, are attained by meeting and exceeding the military mission goals, the ranks of Vice Admiral, Admiral, and Grand Admiral are reserved for **Tie Fighter** expansion disks and sequels.

Your game begins at the Concourse, which has seven doors that lead to registration, training simulator, combat chamber, change battles room, tech room, film room, and continue battle hangar. The training simulator takes the ships of the game through progressive levels of a maze of tunnels with targets and hoops to fly through while the timer is running. Successful completion of the training simulator in each of the six

Imperial fighters gives a patch on the training certificate for each level. The combat chamber takes the pilot through four progressively more difficult missions in each of the six Imperial fighters. Successful completion of the combat chamber simulations results in the awarding of an appropriate training medal in bronze, silver, or gold. Training in either simulator or trainer is not required before you take on the combat campaign missions, but this training is highly recommended.

There are seven battles, with an average of seven missions per battle, for a total of over 50 new missions. Success in one mission moves the pilot on to the other mission within the battle. Battles can be fought one at a time, in order, or can be fought in any order, except the last battle, where the pilot saves the Emperor from traitors. However, the best effect can be served by taking the battles in order, one by one. Successful battles and battle missions are added to the combat chamber, allowing the successful pilot to refly them for added enjoyment.

The plot begins at the end of the rebel flight from the ice planet Hoth, and the events occur during the time span of



If flying on the dark side has you confused, **Tie Fighter: The Official Strategy Guide** from Prima might help. Written by Rusel DeMaria (also the author of *X-Wing* and *Myst* strategy guides), David Wessman, and David Maxwell, this tome is filled with useful information for struggling Empire pilots.

Following the same style of DeMaria's previous hint books, there are strategies, secrets and scoring charts to aid the reader in determining how best to approach **Tie Fighter's** multitude of missions.

The best information in this book comes at the end of each mission strategy piece. All primary, secondary, and bonus goals are listed. Since these goals are not always obvious in later missions of **Tie Fighter**, and since their completion is pivotal in advancing within the Emperor's Inner Circle, these are helpful notes. Also provided are listings of attainable rankings and point levels, descriptions of opponent AI levels, and a comprehensive set of mission statistics. It is unfortunate that some of the more useful information was lacking from the original game documentation.

TIE FIGHTER STRATEGY GUIDE

FROM PRIMA PRESS
BY BERNARD DY

As one had to do in previous books, however, one must still wade through a smattering of DeMaria's fiction segments which are used to connect the different episodes of the game and also to provide atmosphere. By DeMaria's own admission, the user can ignore the fiction and concentrate on the strategy sections of the book, if so desired. While I found some of the fiction to be fluff, some of it was very well conceived. I particularly enjoyed the passages which linked the missions of the last three battles together. They painted a background which lent sense to some of the events in **Tie Fighter**.

Additionally, the presentation of this book is solid because the fiction is identified and separated from the rest of the text by a different font. This makes it easy to key on important sections. The book is organized well, with a logical sequence moving from the training missions and introductory tips through the main battles and concluding with appendices. Each section is clearly marked by a title, map screen, and picture of the spacecraft featured in the mission. Nice artwork and timely screen shots complement the text.

This strategy guide is a solid one, though **Tie Fighter** players may find the book is less valuable than the *Myst* guide was for *Myst* players. Nevertheless, experts trying to glean as much as they can from the game and earn favor with the Emperor will find the book a worthy purchase.

the second movie, *The Empire Strikes Back*. While events occur as they do in the second movie, you do not find yourself in the events of that movie, but somewhere else in the Empire, fighting other battles under the command of Lord Vader and Vice Admiral Thrawn. The adventure portion of the game centers around the Empire's lust for technological advantage in the battle with the Rebel Alliance.

The inflight map is now three-dimensional, replacing the old *X-Wing* 2-D map. The 3-D map now shows where the planes are exactly with respect to the player's ship, not only on the x- and y-axis, but also how far the planes are above and below the horizontal plane. Since **Tie Fighter** is essentially a three-dimensional fighter simulation with a three-dimensional artificial intelligence for the enemy and friendly starfighters, this added 3-D map provides more useful information.

The new gouraud-shading, light-

sourced, filled-polygon, animated graphics have more texture, dimension, and life than the older *X-Wing* ships. According to LucasArts, "Gouraud shading smooths out the flat edges of the polygons by adding gradient color to make single colored surfaces look rounded and textured." The ships have more details and greater resolution than earlier games. Martin Cameron is to be commended for his rendition of the Imperial Assault Gunboat.

Cut scenes use an advanced 3-D graphics engine, developed with the proprietary story engine, called Landru, which was developed by Kilham for the *X-Wing* game. The 3-D engine provides realistic and powerfully dynamic full-screen animated sequences.

The digitally mastered four-channel sound uses a technique of changing tempo and removing sounds to change the mood of the music to coincide with changes in the action. By turning off certain instruments, the mood can be

changed in classic fashion with which many are familiar, from Disney's Peter and the Wolf. The music was composed by Clint Bajakian, Michael Land, and Peter McConnel to have emotions and set the mood of the story, which is somber but also patriotic, with noble goals.

Sound effects come from the extensive sound effects bank that was created for the original film. The same distinctive, ship-specific, banshee whine can be heard emanating from the ships as they pass closely by your ship. **Tie Fighter** features the LucasArts' proprietary Interactive Music and Sound Effects (iMUSE) sound system, which composes a seamless soundtrack of music on the fly in response to the human responses of the player character. Having the authentic LucasArts Star Wars sound effects goes a long way toward adding another dimension to reality.

Voice actors were used to get just the right sound out of the voices, such as Darth Vader, the ship command admirals, the stormtroopers, and some of the dog fight human speech, which signalled which mission goals were complete. Voice is not used for all communications, which would be ideal, and could be displayed in addition to the printed messages and log. Human speech adds another dimension.

There are two planned sequel space combat campaigns to be released soon after the release of **Tie Fighter**, to extend and expand on the experience. Save games are keyed to the saved character, the numbers of which are limited only by available hard drive space. Copy protection is similar to *X-Wing*, with codes from 31 pages of the *Starfighter Pilot Manual* that comes with the game.

The game looks and sounds more real, and therefore the suspension of disbelief is greater. You really feel like you are in the Star Wars universe. You can easily get lost in the experience. No doubt about it — games are getting better and better.

Suggested Retail Price: \$63.95

Requires: 386/33MHz CPU or better with four megabytes of RAM, 13.5 megabytes of free hard disk space, 256-color VGA

For more information, contact LucasArts Entertainment Company, P.O. Box 10307, San Rafael, CA 94912, or call (800) STAR WARS — (800)782-7927. □

ALIEN LEGACY

(continued from page 13)

After the Calypso was launched, a second ship, the Tantalus, was also sent to the same destination. The Tantalus, however, was built with superior engines, so it arrives in the sector 21 years before the Calypso. After all contact is lost with Tantalus' survivors, your mission is amended to include uncovering the mystery of the lost ship. These story lines are decent ones and do their best to keep **Alien Legacy** an interesting game, but you'll only see the conclusion if you have great patience.

There are many different tasks for you to do in this game. The first order of business is to begin building more life support units aboard the Calypso. As a seed ship, it has a large capacity, and you can build all sorts of structures within. The life support units, factories (which manufacture robots, ore, or

vehicles), defense structures, and research labs all remind one of similar items available in Outpost. The exploration aspect of the game is in theory just like Outpost's, but much simpler to execute.

After getting enough people out of cryo sleep, you can put some to work in the factories and research labs. You can also begin sending out ships as probes to other planets, where you can establish colonies. Unlike Outpost, this is not a painstaking process regulated by dozens of factors. Space travel in **Alien Legacy** is limited only by distance and fuel capacity, and life support for your people does not require worrying about oxygen or waste facilities, though ore and energy plants are similarly pivotal.

As in Outpost, you will find yourself constantly short of ore and sometimes life support. Besides building mines and power plants, you can attempt extraction of these raw materials from the planets and asteroids you visit.

Alien Legacy has a mini-flight sim applet where you cruise over fractal landscapes and discover ore and energy deposits, as well as scientific finds. If you like "hard" science fiction, you will enjoy **Alien Legacy's**

descriptions for these finds, which are then used to add points to your scientific resources (geology, electronics, mathematics, biology, physics, astronomy, and chemistry). These discoveries are valuable, as the scientific resource points are then used to research new technologies which will help you advance through the game. Examples include new propulsion technology for ships and metal research breakthroughs which improve the efficiency of factories and power plants. I found myself cheering each time my robot crewman announced "Eureka!" as technologies were discovered.

The ship explorations are also necessary to find the remnants of the Tantalus colonies or ships. Exploration is therefore a crucial part of the game, and while it can be fun, it can also become tedious, since it must be manually performed by the user. The game lacks automation features for exploring planets, and playing becomes a struggle between managing the colonies, shuffling resources amongst them, flying

exploration, and keeping up on technology research. Add to this mix an interface which needs some streamlining, and **Alien Legacy** can become tiresome after thousands of turns.

More tools are needed to help the user watch colony progression. When dozens of ships and colonies are available, it is overwhelming to manage

Type of game: Strategy

Developer: Ybarra Productions

Publisher: Sierra On-Line / Dynamix

Requirements: 386SX 20, 4Mb RAM, 24Mb free on hard drive, DOS 5.0 or higher, mouse, floppy drive or CD-ROM drive (depending on which version)

Recommended: Sound card

AVIATION COLLECTIBLES CATALOG

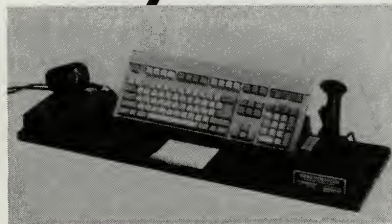
Filled with Hundreds of Authentic Military Aviation Items. Both Old & New; Helmets, Oxygen Masks, Jet Stick Grips, Manuals, Flight Suits, MFG. Models, Ejection Chairs, PLUS MUCH MORE! All The Real Thing.

SEND: \$2.00 U.S. / \$5.00 FOREIGN



AVIATION ARTIFACTS, INC.
1213 Sandstone Dr., St. Charles, MO 63304-6830

Full Cockpit Action For About The Price Of A Joystick!



The Flightdeck

ETLOH TECHNOLOGIES

(714) 891-6425

P.O. Box 1493

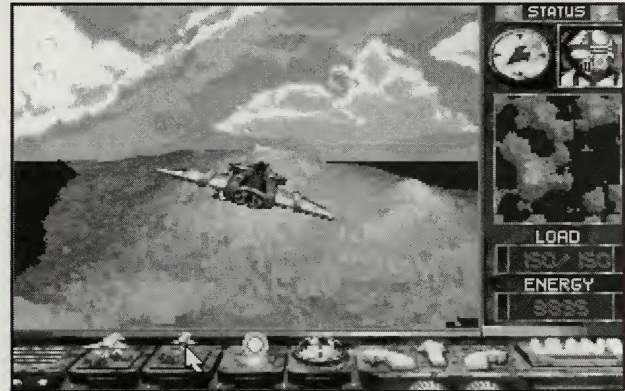
Westminster, CA 92684-1493

Send check or money order for \$79.95 + \$8.00

S&H. Credit Cards accepted. No. COD's.

Thrustmaster is a registered trademark of Thrustmaster, Inc.

The Flightdeck is a registered trademark of Etloh Technologies.



each and every one. Perhaps spreadsheet-style reports would have helped. The user always has to work through a series of menus and options to get to a destination. Building/empire games usually have this shortcoming because as the user's forces propagate, managing the large numbers becomes naturally and increasingly cumbersome. Certainly, the interface works, and includes a toolbar and some very helpful filters, but I feel it could be improved. In **Alien Legacy's** favor, I have yet to uncover any major bugs.

Finally, the graphics lack the flash of Outpost. They succeed, however, at being crisp and functional, and that is all I normally ask for. The documentation is complete, substantially more so than Outpost's, and includes a quick reference card. **Alien Legacy** is a fine product overall, and is recommended to science fiction enthusiasts and gamers that liked Outpost's premise but were disappointed with its "blindfold the user" approach. You will find plenty of gameplay and hands-on action in this product. □

Within the City Limits, Beyond the Boundaries of Desire.

NOCTROPOLIS. It glitters before you, with menace and allure. Does the Succubus bend to you in tenderness or carnal rage? Will you escape the corrupt

longings of the surgically sadistic Master Macabre? Can you keep the Sovereign of darkness from the light?

Come into the city. And enter a nightmare only consummate evil could conceive.

Handpainted scenes of eerie beauty draw you ever deeper into a tale of twisted desire.

The graphics are gorgeous. The characters, devious and debauched. And the story for mature audiences only.

NOCTROPOLIS

The City of Night
An Adventure in Depravity



ELECTRONIC ARTS' The Flashpoint logo is a trademark of Flashpoint Productions, Inc. The Electronic Arts logo is a registered trademark of Electronic Arts. Noctropolis is a trademark of Electronic Arts.



Aviation Art

SIXTEEN BEST BUYS FOR CHRISTMAS

BY LARRY W. BLEDSOE

It's not too early to be thinking about what you would like for Christmas. Especially aviation art prints that depict your favorite aircraft. Here are 16 you may want to consider. Pick the one you want, circle it in red, and leave the magazine where You-Know-Who will see it.

There have been so many good prints published this year that it is hard to choose 16 best buys. Criteria used in selecting these prints include availability, price, popularity, and that it relate to some computer simulation game. Prints from five different eras have been selected: WWI, nostalgic, WWII, modern jet, and helicopters.

Robert Taylor and Nicholas Trudgian prints have purposely been excluded. Because of their popularity, they sell out very quickly, and by the time this article is in your hands, any selected would most likely be available only on the secondary market.

WWI

You don't see many new prints coming out that depict WWI combat scenes these days. One is Frank Wootton's "Last Combat of the Red Baron." The print depicts Lt. Brown in his Sopwith Camel, chasing Baron von Richthofen in his red Fokker triplane high over the battlefield.

An excellent new print by Jim Dietz has just been released. The print, "Bonne Chance," shows young RAF pilots walking through a French farmyard on their way to battle the Hun. It is scenic, full of life, and reminiscent of "knights of olde."

NOSTALGIC

In the nostalgic category are two very popular prints by Nixon Galloway. "Barn



Snowbird by Nixon Galloway.



Barn Stormer by Nixon Galloway.



Deliverance by Dru Blair.



Hunting Fever by Heinz Krebs.

KNOW YOUR
COMBAT
JETS

Are you combat-ready?



Axia's comprehensive guide to the world's fighter and ground-attack jets.

85 variants of 60 jets, from the workhorse MiG-21 to the state-of-the-black-arts F117 'Stealth'. Hundreds of full screen color photos. Explosive video of air-to-air and air-to-ground missile strikes. Performance charts compare range, ceiling, rate-of-climb and top speed. Detailed technical illustrations. *No matter what you're flying, this CD-ROM will tell you everything you need to know about fighter and ground-attack jets!*



Credit Card Orders: Visa & American Express accepted. Call 1 - 800 - WOW-AXIA (969-2942)

Distributors and Retailers Contact:

AXIA International Inc.

Suite 510, 840 6 Avenue S.W., Calgary AB, Canada T2P 3E5

Tel.: (403) 262-2942. Fax: (403) 261-1675. Compuserve: 74514,2245

Attention: Mark Gardiner, Executive Director - Multimedia Marketing



Stormer" shows a red and white Stearman climbing up the side of a barn with two awe-struck kids in the hayloft. An open edition, this print is already in its second printing.

The second Galloway print is "Snowbird" which you may have seen as an AOPA Christmas card. It was released in June, published as a limited edition, and is selling quite well. It shows a Stearman sitting in a farmyard waiting for the snow storm to end, so its owner can go back to work checking downed power lines. The Stearman was a workhorse, and was used for many tasks — training, skywriting, crop dusting, powerline and pipeline patrols, barnstorming, and air shows. You name it, a Stearman has probably done it.



Power by Dru Blair.

WWII

For the WWII timeframe, six different prints have been selected. "Spitfire" by Barrie Clark is one of the two most popular open edition prints ever to be published. It shows a Spitfire coming out of a storm cloud and is an attention-getter. Even the non-aviation oriented are attracted to this print.

Nixon Galloway's "Welcome Little Brother" depicts two B-25s coming toward you, one trailing smoke and both skimming broken clouds over the ocean. In the background, a P-51 is banking into a trail position. Eric Shilling noted something unique about this print — no matter where you stand, the lead plane is coming toward you. Fascinating!

Jim Dietz is a master of detail, and his print "Maximum Effort" showing a B-24 crew preparing for take-off, is an excellent example of his talent.

BEST CHRISTMAS BUYS, 1994					
Print Title	Artist	A/C Type	Price	Edition	Publisher/Distributor
WWI					
Last Combat of the Red Baron	Frank Wootton	Sopwith/Fokker	\$185	LE	Greenwich Workshop
Bonne Chance	Jim Dietz	—	\$150	LE	Spofford House
Nostalgic					
Barn Stormer	Nixon Galloway	Stearman	\$ 35	Open	Bledsoe's Aviation Art
Snow Bird	Nixon Galloway	Stearman	\$ 75	LE	Bledsoe's Aviation Art
WWII					
Spitfire	Barrie Clark	Spitfire	\$ 35	Open	Rosenstiel's
A Christmas Leave	William S. Phillips	—	\$185	LE	Greenwich Workshop
Welcome Little Brother	Nixon Galloway	B-25/P-51	\$ 30	Open	Bledsoe's Aviation Art
Maximum Effort	Jim Dietz	B-24	\$125	LE	Wilkes Trust
Jagdfieber	Heinz Krebs	P-38/ME-262	\$135	LE	Art Haus
Cripes A'Mighty 3rd	Mark Waki	P-51	\$ 25	Open	Aviation Illustrators
Modern Jets					
Lethal Encounter	William S. Phillips	F-105/MiG-17	\$225	LE	Greenwich Workshop
At the Break	Stan Stokes	F-14	\$150	LE	New Masters
Power	Bru Blair	B-1	\$ 45	Open	Blair Art Studios
Dawn of the Nighthawk	Matthew Waki	F-117	\$145	LE	Aviation Illustrators
Helicopters					
Deliverance	Dru Blair	AH-64 Apache	\$ 45	Open	Blair Art Studios
The Defense of An Loc	Dru Blair	AH-1 Cobra	\$ 85	LE	Blair Art Studios

Heinz Krebs, a German artist, has produced some very popular prints. "Checkmate," which depicts two P-51s passing over a train they have just shot up, is fantastic. Unfortunately, it is sold out at the publisher. Fortunately, I still have a few in stock. Another of his prints is "Jagdfieber," (that is, "Hunter's Fever,") a superb rendering of a P-38, which has just made a head-on pass with two Me-262s over the Alps. At \$135, this is an outstanding buy, especially since his subsequent prints were released at \$195.

Mark Waki's "Cripes A'Mighty 3rd" has been included for several reasons. No list would be complete without a P-51, and Mark's print is a popular example. It is an open edition, low-priced and the right size to fill that small space left on your wall.

MODERN JETS

There is not an abundance of prints depicting modern jets, but here are four that will appeal to **PC COMBAT** readers. "Lethal Encounter" by William S. Phillips shows an F-105 Thud putting the finishing touch on a MiG-17 over North Vietnam. This is an excellent print that exemplifies the quality of Phillips' talent. It shows two of the major combatant aircraft used in Vietnam, and is a tribute to the men who flew them, especially Col. Leo K. Thorsness and Col. Harold E. Johnson who countersigned the print.

A Navy print is needed, and the ever-

popular F-14 Tomcat is the one to show. Stan Stokes' "At the Break," is a medium-priced limited edition which I'm sure you will enjoy.

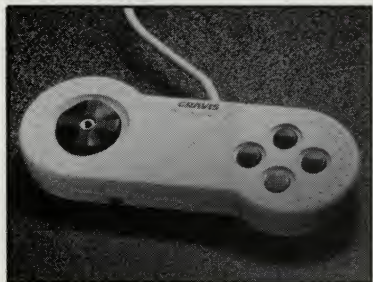
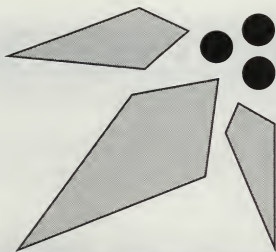
For the Air Force, we have "Power" by Dru Blair. More than 50,000 prints have been sold, which attests to its popularity. It is awesome seeing the B-1 creating a monstrous rooster tail over the water.

The F-117 Stealth fighter has got to be one of the most unglamorous aircraft in the Air Force's inventory, but it does the job, and that's what counts. Matthew Waki's "Dawn of the Nighthawk" is probably the best print of the F-117 available.

HELICOPTERS

There are too few good helicopter prints available today. William S. Phillips' "Long Green Line," was the best available until this year. Dru Blair has recently released several good helicopter prints, one of which is "Deliverance," an open edition showing an AH-64 Apache whipping up a mist of water from a quiet river. Another print, "The Defense of An Loc," shows the AH-1 Cobra in action.

These 16 prints are only a sampling of the many fine prints that are available. They represent different artists, styles, and aircraft and are among the best that are available today. Contact your favorite aviation art supplier for any of these great prints. Or call Bledsoe's Aviation Art at (800) 448-3102, or B-2 Aviation Art at (805) 565-4782. □



PC Gamepad by Gravis

So you want to buy that special someone something extra special this season. Whether that special someone is a spouse, parent, child, other loved one, or just yourself, you may be looking to purchase a controller for Christmas. So go ahead and buy something that will really be enjoyed, even if you have to take back some other unwanted gifts after Christmas to pay for it.

This Christmas season has an unusually heavy release of very unusual controllers. Thrustmaster is releasing their nine-button and 24-function F-16 Flight Control System (F-16 FLCS). Advanced Gravis is releasing the ultra-modern Phoenix combination joystick, throttle, and rudder pedals, with 24 buttons. CH is releasing the Virtual Pilot Pro with eight buttons, 14 functions, two trim wheels, and a throttle control. Logitech is joining the fray with two ergonomically-moulded-grip entries — the two-button WingMan and the five-button, eight-function WingMan Extreme.

While not in the running for new releases, old standby companies are also entering the Christmas cash competition. Winner continues to offer their Flight Yoke 2001 with throttle and rudder control and several joystick products. QuickShot continues with a large range of products, including some of the most bizarre-looking, amazingly-functional products in the industry, that not only work well but support the fantasy, with the AeroACE 5 yoke and Intruder 5 joystick. Suncom has a wide range of low cost, high quality products, including the reliable G-Force Yoke, and joysticks like the ambidextrous dual-throttle FlightMAX and FX-2000.

CHRISTMAS CONTROLLER CORNUCOPIA

BY ALFRED
GIOVETTI



G-Force by Suncom

THRUSTMASTER F-16 FLCS

The F-16 FLCS is an impressive product based upon the look and functions of the F-16 joystick. Thrustmaster intends to eliminate the

objections that many have had to their products in the past with this product. The F-16 FLCS is meant to appeal to those who like to get into a product quickly, but still appeal to those who

enjoy fooling around with a product for hours, customizing it to their own specifications.

The joystick works with the Mark II Weapons Control System (WCS2) and the popular and durable Rudder Control System (RCS), and ties into the computer system with a pass-through keyboard controller and a pass-through 15-pin joystick controller. Commands for every known flight simulator are contained on software, which can be downloaded to a RAM bank within the joystick itself, and, when combined with the WCS2, makes a fully programmable HOTAS (Hands On Throttle And Stick) system, with quick start command software.

The stick has four four-way hat switches, three on the top and one on the left side of the joystick, which are used for trim and views. A red weapons release button is next to the bank of three four-position switches. There are two pinky buttons, one button on the right side of the joystick, and a two-position trigger, giving the program a phenomenal 23 functions, and when combined with the WCS and RCS an additional 10 functions are supported. By combining buttons and settings with multiple key presses, even more functions are available.

The F-16 FLCS is certainly one of the most complex systems for controlling flight simulators. All that complexity can be overwhelming, even for someone who has read the 106-page F-16 FLCS manual and the 80-page WCS manual. The F-16 FLCS retails for \$175, but can be found on the street for \$111.

For more details, contact Thrustmaster Incorporated, 10150 SW Nimbus Ave., Portland, OR 97223-4337, or call (503) 639-3200.

ADVANCED GRAVIS PHOENIX FLIGHT AND WEAPONS CONTROL SYSTEM

The Phoenix is designed like something out of a futuristic warbird, with the throttle control arm projecting at a rakish angle off the top lefthand side of the machine. The base is

equally bizarre, with the combined dimple matrix array, circular nonfunctional design, 24 programmable buttons, and analog or digital rudder and throttle control.

The jet black joystick has a number of multicolored buttons and a jet-like control stick, with an oversized head. The throttle control rotates clockwise on the control arm to increase throttle.

Phoenix, available for both Macintosh and PC, goes for \$149.95.

For more info, contact Advanced Gravis Computer Technology, 1790 Midway Lane, Bellingham, WA 98226, or call (601) 431-5020.

CH VIRTUAL PILOT PRO

Virtual Pilot is a standard for yokes, with a smooth, authentically operating yoke that works with generic rudder pedals to simulate the controller preferred in commercial and private planes. The Pilot Pro comes with a top-mounted rudder control, clamps for the table, four four-way switches and six "fire" buttons, and a reputation for not breaking under the most strenuous conditions. Where to place the keyboard can cause some frustration; just move it around until you find a convenient spot.

Other products are planned for after Christmas, including Pro Pedals, which will improve on many that are now available, with pedals that can be adapted for cars, boats, planes, and toe brakes. Another CH project is the Pro Throttle, which at this time does not even have art available to the public, and is therefore a long way off in the future. CH Products have pots for controller stick movement rated for two million cycles and button switches for 10 million key presses.

For more info, contact CH Products, 970 Park Center Drive, Vista, CA 92083, or call (619) 598-2518.

LOGITECH WINGMAN AND WINGMAN EXTREME

Logitech is joining the controller competition with two joysticks. One is similar to the CH Flightstick Pro or Thrustmaster, with four buttons and a hat switch for views. The joysticks incorporate a sturdy, comfortable, molded grip, throttle on the WingMan, dual trim wheels, rubber-encased buttons for firing accuracy, solid construction, and a stable base.

The WingMan Extreme has no throttle controller, and the direct wiring allows you to push multiple buttons without interference. The prices for both are \$39.95 and \$69.95 respectively.

For more information, contact Logitech Incorporated, 6505 Kaiser Dr., Fremont CA 94555, or call (510) 795-8500.

QUICKSHOT AEROACE AND INTRUDER 5

QuickShot has two bizarre designs that will take you back to your childhood. The concept must be successful, with over 30 million in worldwide sales.

The \$44.99 AeroACE yoke has a hokey but fantastic fluid-filled horizon ball right in the center of the joystick on all six of the model types. The Intruder 5 has to win some award for design and originality with the joystick protruding horizontally from the rear of a fat blob of a base. The stick then takes a right angle turn into the horizontal position. The lowered front of the stick, the two-position turbo fire slide switches, and the trim dials have to be experienced to be believed.

For more details, contact QuickShot Technology Incorporated, 47473 Aeabridge Drive, Fremont, CA 94538, or call (510) 490-7968.

WINNER FLIGHT YOKE 2001

Winner's Flight Yoke 2001 is a solid, dependable yoke with rudder, trim, and throttle in one clamp or suction cup to the desktop unit, which can be used for driving, flying, and sailing. Sniper and Pistol Stick joysticks come in the standard two-button style with a throttle.

For more details, contact Winner Products Incorporated, 821 S. Lemon Ave., Unit A9, Walnut, CA 91789, or call (909) 595-2490.

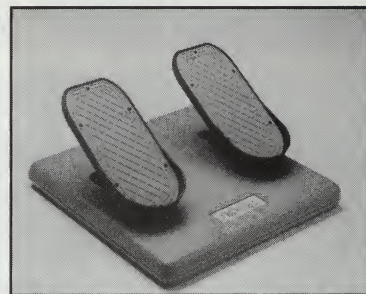
SUNCOM FLIGHTMAX

Suncom's \$49.95 flagship FlightMAX joystick, with dual throttle control for left- and right-handed play, 360-degree "Saturn ring" control stick suspension system, dual slider trim, turbo fire, and two buttons, is an easy to use and durable product. Other products include the G-Force yoke, which is easy to use and set up, and works well with your keyboard and other computer equipment in a small space.

For more details, contact Suncom Technologies, 6400 West Gross Point Rd., Niles, IL 60714, or call (708) 647-4040.



Flightstick Pro by CH Products



Pro Pedals by CH Products



Wing Man by Logitech



Wing Man Extreme by Logitech

PC COMBAT SIMS

HARDWARE TEST LAB

ORCHID'S NEW KELVIN 64 GRAPHICS ACCELERATOR SIZZLES

If you want the ultimate in video cards, check out the new **KELVIN 64** from Orchid. This baby is HOT. Unlike other 32-bit cards, the **Kelvin's** 64-bit processing power will accelerate your programs in ALL DISPLAY MODES. And, unlike some boards which accelerate Windows at the expense of DOS-based applications, the **Kelvin** blasted through the most graphically intense application without so much as hiccup. Why is it so fast? The card uses linear addressing which increases performance as it allows faster access to the onboard display memory.

What does this mean for us PC gamers who feel the need for speed? Graphic-intensive sims such as Pacific Strike or Flight Sim 5 with all the scenery parameters turned on to the max ran seamlessly with no hesitation on screen redraw. Unfortunately, I cannot say the same for the Viper card that was in the computer.

You can also run Windows in all the standard resolutions, including a staggering 65,538 colors at 1024 x 768 and 256 colors at 1280 x 1024. The card I tested came with two megs of DRAM. We tested both VESA local bus and PCI versions with the PCI bus having a slight edge in performance.

Installing the card was a no-brainer. The **Kelvin** also comes with some neat software utilities — the virtual screen utility lets you view a 1024 x 768 desktop on a low-res monitor while the Magnification Utility lets you zoom in and out at the touch of a button. If you want the ultimate in speed at a very attractive price, the **Kelvin 64** is THE card to get. Suggested retail price is \$250.

For more information, contact Orchid Technology, 45365 Northport Loop West, Fremont, CA 94538-9973, or call (510) 683-0300. □



BY PATRICK HUNT

NEW

FROM

CH

PRODUCTS



Fly higher with VIRTUAL PILOT PRO™! Taking the best features of the award-winning VIRTUAL PILOT™ plus added viewing capabilities and fire buttons, it is ideal for advanced flight simulation and driving games. For those who take their game playing seriously! For IBM PC-compatible computers.



PRO PEDALS™ are the only rudders which feature both forward and back rudder motion for flying and a pivot movement accelerator and brake control for driving games. Compatible with CH Products' entire IBM PC-compatible line.



Jump into the cockpit and experience your most intense flight ever with FLIGHTSTICK PRO for 3DO™, the first 3DO analog joystick. A thrill to use with 3DO software from companies like Crystal Dynamics, Domark, and Dynamix!

Take total control of your aircraft without ever removing your hand from the stick! FLIGHTSTICK PRO for Macintosh™ features a programmable trigger, three fire buttons, and a programmable eight-way switch. It attaches to the ADB port found on Mac SE or later models and requires 6.0.7 software or higher.



TRACKBALL PRO™ is a great alternative to the traditional mouse. It also serves as a professional pointing device for desktop publishing, CAD/CAM, and games. Available for both IBM PC-compatible and Macintosh computers.

Fly the best!



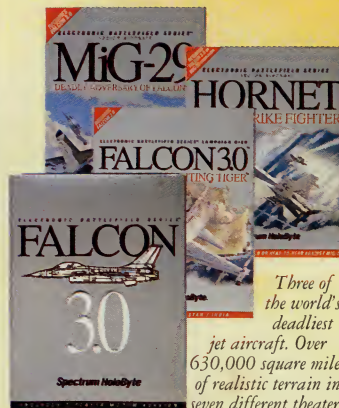
970 Park Center Drive • Vista, CA 92083 • Phone: 619 598-2518 • FAX: 619-598-2524

Macintosh is a registered trademark of Apple Computer, Inc.
3DO is a trademark of The 3DO Company.

FALCON GOLD: THE BEST-SELLING COMBAT FLIGHT SIMULATIONS OF ALL TIME NOW IN ONE HANGAR.



**The complete collection
of Falcon 3.0 flight
simulations plus
Art of the Kill, the
ultimate dogfighting
trainer, on one CD-ROM!**



Three of the world's deadliest jet aircraft. Over 630,000 square miles of realistic terrain in seven different theaters of war. Solitaire, two-player head-to-head, and six-player network play. Only Falcon Gold has so much action.

Never before has such awe-some firepower and excitement come together. *Falcon Gold* combines the newest versions of *Falcon*® 3.0, *MiG-29*™, *Hornet: Naval Strike Fighter*™, and *Operation: Fighting Tiger*™

plus *Art of the Kill*™—a tremendous value!

Experience nonstop action with updated flight models of *MiG* and *Hornet*. Face real-world tactics as you lead your squadron to victory. Enjoy explosive air combat as you dogfight and bomb your way through seven fully-animated war zones. Your gameplay decides the outcome



Learn the secrets of air-to-air combat from the pros with *Art of the Kill*.



Experience deadly air-to-air and air-to-ground combat with fully realistic aircraft.

of every battle. *Art of the Kill* is the hottest live-action training ever. Learn from a pro how to maneuver and attack—then fly your own training missions.

Nothing gives you thrills this real. Nothing shines like *Falcon Gold*.



2490 Mariner Square Loop, Alameda, CA 94501

For Visa/MasterCard orders call 24 hours a day,
7 days a week: (800) 695-GAME.